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WALL STREET IN FOG OVER E-SIGNATURES

Uncertainty about impact, applicability of provisions remains as law takes effect

BY MARIA TROMBLY
NEW YORK

Wall Street executives last week were unclear how to comply with the document-storage provisions of electronic-signature legislation that took effect yesterday.

The Securities and Exchange Commission has its own guidelines for how long companies should store documents and give customers access to those electronic files. But those aren't as strict as the stipulations in the electronic-signatures law, which has numerous protections to ensure that electronic documents don't replace paper ones in cases where consumers don't have computer access.

"Some of us in the industry
E-Signatures, page 101

E-Sign of the Times

Consumers are protected under the e-Sign legislation, which went into effect Oct. 1.

■ They must agree to **electronic delivery** of documents.

■ They have the **right to request** paper documents.

■ They must be told what technology is needed to **access stored versions** of the documents.

AFTER MERGING with Chemical, Chase eliminated 700 redundant systems, says CIO Richard F. Mangogna

ELUSIVE PAYOFFS

YOU'VE SEEN THE PRESS CONFERENCES WHERE THE BACKSLAPPING CEOs promise multimillion-dollar IT cost savings from their big mergers. But does it really happen? Gary H. Anthes and Kim S. Nash look back at some of the huge bank mergers of the past few years and find out that some met their cost-cutting goals (Chase/Chemical was a home run) and some didn't (Bank One/First Chicago fell $430 million short). *Story begins on page 52.*

MERGERS

ENERGY SALES FUEL EXCHANGES

Firms lock in prices, cut IT costs buying online

BY JULIA KING

Corporations may be wary of buying goods directly from unknown suppliers at electronic marketplaces, but they seem to have no problem purchasing the energy to power their factories, run their trucks or keep the office lights on.

This morning, United Parcel Service of America Inc. in Atlanta will tap into the American Petroleum Exchange (www.apexchange.com) in Rockville, Md., to buy 87 million gallons of diesel fuel and gasoline to run its fleet of delivery trucks.

Days later, Memphis-based FedEx Corp. is scheduled to buy 5 million gallons of diesel
Energy, page 101

LAST REMAINS CAN GO TO FINAL REST

Tech was key to ID of last name on 'Nam Memorial

BY BOB BREWIN
HONOLULU

On Oct. 27, Air Force helicopter pilot 2nd Lt. Richard Vandegeer — the last name on the Vietnam Memorial in Washington — will be buried in a solemn, private ceremony at Arlington National Cemetery, capping a decade-long recovery and identification operation by the Army Central Identification Laboratory, based here.

The identification by the lab, known as CILHI, took four years and the use of "the most cutting-edge technologies available" to sort Vandegeer's remains from those of the others killed in the crash that took his life, said John Byrd, a CILHI staff anthropologist. His work on the case included supervising archaeological digs on Koh Tang Island, Cambodia, where Vandegeer's helicopter crashed on May 15, 1975, in the last combat action of the Vietnam War.

COMING HOME

In fact, from the Global Positioning System-based receivers and laser transits used to locate the aircraft to the radio e-mail systems accessed by search teams in remote areas, technology was a big part of the recovery operation. And it will remain so, as the lab continues to handle search-and-identification operations for soldiers of the Vietnam and Korean wars, and even those of World War II.
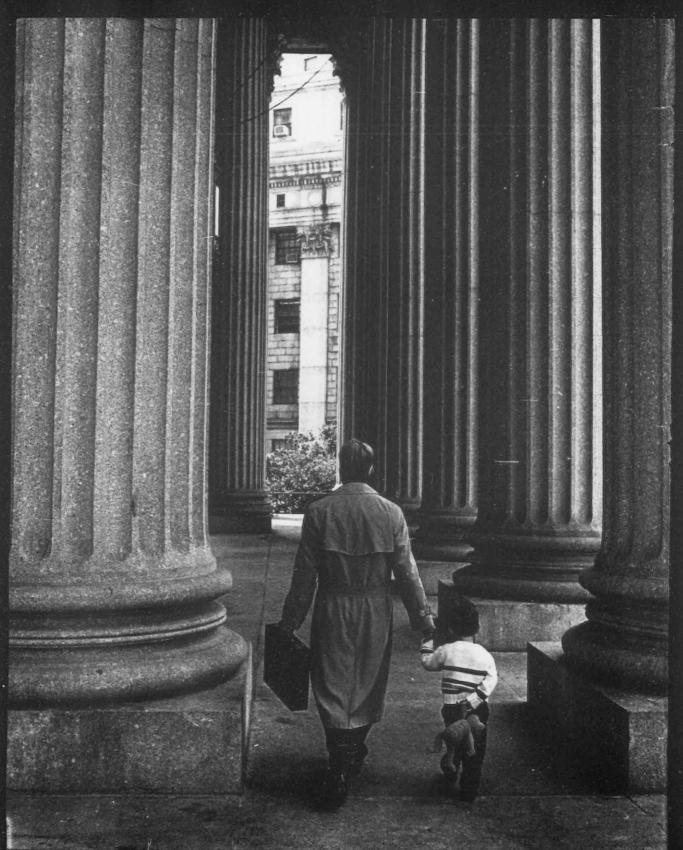*Vietnam, page 16*

ANNOUNCING SOLUTIONS FOR THE *NEW*, NEW ECONOMY.

(YOU KNOW, THE PROFITABLE ONE.)

The promise of e-business is every bit as robust today as it was when the "new economy" was declared. It's just that things that were labeled passé and irrelevant when IPOs were soaring have returned with a vengeance – planning, infrastructure, even profitability are back in fashion. Welcome to the new "new economy." No company is better suited for this world of value-oriented e-business than SAP. We have the best solutions for collaboration, supply chains, improving customer relationships and generally adding value to a company's business proposition. Out with the "new." In with the "new new." Type in www.mySAP.com

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GETTING TO KNOW YOU

Job seekers like John Carroll turn to the Web to learn more about potential employers. But most potential employees and employers still prefer traditional methods to learn about one another. Page 58

FUTURE VIEWED FROM ALL ANGLES

Holographic technology may fulfill its sci-fi promise in the next few decades, but even now, it's moving out of the labs and into practical applications. Page 74

COMPUTERWORLD THIS WEEK

OCTOBER 2, 2000

Apple Gives Sour Earnings Forecast

Stock in Apple Computer Inc. dropped precipitously in after-hours trading Sept. 28 after the company announced that fourth-quarter earnings will fall well below analysts' expectations due, in part, to slow September product sales. The stock plummeted $27 in overnight trading, standing at just over $26 early on Sept. 29, representing a loss of more than 51%.

3Com Technology Aids Presidential Debates

The Commission on Presidential Debates is getting help from 3Com Corp. in Santa Clara, Calif., to provide the network infrastructure for online surveys that will gauge voters' sentiments before and after the three televised debates between presidential candidates Al Gore and George W. Bush. 3Com network switches will help distribute the incoming survey information to servers that will provide the results of the polling, while the company's visitor-based network division is providing 10MB broadband connectivity for journalists covering the debates. The first debate is this week.

Short Takes

Ben Rosen retired as COMPAQ COMPUTER CORP.'s chairman of the board and will be replaced by CEO Michael Capellas, who will now have both titles. . . . MICROSOFT CORP. said co-founder Paul Allen won't seek re-election to the board of directors. He will instead take on a new role as senior strategy adviser to top executives at Microsoft. . . . COMPUTER ASSOCIATES INTERNATIONAL INC. in Islandia, N.Y., will roll out a suite of analytical customer relationship management software. The suite is based on CA's Jasmine ii e-business and Neugents neural network products. . . . ORACLE CORP. today is announcing Oracle9i Internet Application Server and a new version of its database, also known as Oracle9i. . . . One month after it announced a major restructuring plan, vendor MICROSTRATEGY INC. in Vienna, Va., this week is changing its sales and distribution plan, based on a new pricing scheme and an online store.

Customers Approve of Nortel/Clarify Union

Users say they're happy after buyout but want additional application features

BY MARC L. SONGINI

BRYAN DiGIORGIO has spent the past year consolidating H&R Block Inc.'s three customer call centers into one.

The center is being standardized around San Jose-based Clarify Inc.'s eFrontOffice customer relationship management (CRM) software, which will handle a "smorgasbord" of service activity, including customer support for the firm's tax business, along with mortgage and other financial product ventures, said DiGiorgio, vice president of Kansas City, Mo.-based H&R Block's service center.

Last October, just after H&R Block started working with Clarify, Ontario-based Nortel Networks Corp. announced that it was buying the software maker for $2.1 billion in stock.

The plan was to make Clarify an independent subsidiary of Nortel, with the parent helping to boost sales of Clarify's eFrontOffice, which integrates Web, face-to-face and phone customer interaction functions.

A year later, DiGiorgio said, the plan is working. He said he believes that Clarify, now part of a Nortel electronic-business unit, will help H&R Block consolidate all disparate data on customers into a single view and use it to cross-sell financial products.

"As a customer, I have seen only benefits," he said.

DWIGHT WILLETT at Enbridge wants Clarify to add wireless support

Other users are giving the buyout a thumbs-up as well.

"Nortel will take on the investment of integrating those [disparate call center channels] together and deliver a turnkey solution that will reduce costs and expedite time to market," said Scott Lien, information systems leader for CRM systems at Minneapolis-based Best Buy Co., an electronics, appliances and entertainment software retailer.

Filling the Gaps

"Clarify is alive and well at Nortel Networks," wrote Peggy Menconi, a research director at AMR Research Inc. in Boston, in a recently published report. Nortel is filling in gaps in the Clarify suite to make it more competitive with CRM leader Siebel Systems Inc., she said.

But some analysts wonder just how successful the marriage of the two companies has been in achieving its goals — both in terms of sales and in speeding integrated products to market.

"Overall, Clarify has had a solid, but not a blowout, year," said Erin Kinikin, an analyst at Cambridge, Mass.-based Giga Information Group Inc. Although Clarify said it's doing well, Nortel doesn't break down its revenue numbers, so that claim has to be taken on faith.

Users said there has been no difference in the levels of service they receive, nor have there been any major price increases, as sometimes happens with mergers.

But these customers still have some wishes they would like granted. DiGiorgio said he would like a tool that would let him direct a customer to the most available service representative, whether that employee is in the call center or a remote office. Others would like to see Clarify's applications made available through wireless handheld devices.

"Seamless support of wireless technologies would allow the product to be expanded to various field operations," said Dwight Willett, vice president and general manager of commercial services at Enbridge Inc., a Calgary, Alberta-based provider of energy distribution and services. Enbridge uses Clarify in its call centers to dispatch mobile field workers. ▶

Hallmark Flowers Looking For Sweet Smell of Success

Retailer branches into floral delivery

BY MARC L. SONGINI

Hallmark Cards Inc. is launching what it claims is a new kind of business — one that will offer overnight flower delivery throughout the nation from a central point.

Making this possible is a customer-order and warehouse automation system that will let newly formed South Haven, Miss.-based Hallmark Flowers take requests, package the flowers and send them to Memphis-based FedEx Corp. for next-day delivery to customers.

Kansas City, Mo.-based Hallmark may be the first company to fulfill all its flower orders from one location, said analysts. Usually, orders made over the Internet or phone are routed to a florist near the customer, as is the case with Downers Grove, Ill.-based FTD.com Inc. and others.

The advantage of Hallmark's system is that the company can directly ensure the quality of the flower arrangements, cut out the middleman's fee and control the entire process, said analysts.

Moreover, it allows flowers freshly harvested all over the world one day to be sitting in a customer's vase the next. This overnight delivery lets buyers enjoy most of the life of the flowers, which rarely last more than a fortnight, said Steve Bellis, president of Hallmark Flowers.

Hallmark, best known for its cards and gift wrap, decided last year that it needed to branch into other areas, said Bellis. The firm anticipates moving several thousand bundles per day to start, he said.

Currently, a pilot system is in place; the full system will go live by year's end.

Customers can order bouquets via the Web or the telephone. From there, the order goes to a warehouse systems-management application called Move from Optum Inc. in White Plains, N.Y. Warehouse workers take the flowers and bundle them with a bar-code tag that can be scanned via radio frequency throughout the entire assembly process.

The Move application checks the original order and indicates what to add to the arrangement before the flowers are shipped, said Bellis. Hallmark has an interface with FedEx's package-tracking system to follow the flowers' progress until they arrive.

This sort of high-speed operation is a long way from Hallmark's core business. "The biggest lesson we learned is we can't win using a new business model without great technology," said Bellis.

Other companies that deal in goods with an equally abbreviated shelf life might want to consider a similar warehouse infrastructure, noted Steve Banker, a supply-chain analyst at ARC Advisory Group Inc. in Dedham, Mass. "It could be translated to other workflows where you are using fast flows and making accurate promises to customers," he said. ▶

Airlines Turn to XML to Fix E-Ticket Transfer Problems

New standard could be in place before next summer

BY MICHAEL MEEHAN
ORLANDO

The top U.S. airlines have decided to try to fix the clunky links among their individual electronic-ticketing systems in an effort to avoid a repetition of the summer's long lines of stranded passengers looking to convert an airline's electronic ticket to a paper ticket that will be honored by another carrier.

Jim Young, managing director for cost measurement and distribution strategy at Continental Airlines Inc. in Houston, said an XML-based standard for sharing electronic-ticket information is being developed by the OpenTravel Alliance (OTA), a travel-industry trade association in Alexandria, Va. Young is chairman of the OTA, which includes all the leading international airlines, computerized reservations systems and hotel chains.

At the eTravelWorld conference in Orlando last week, Young said the OTA is looking to fast-track the XML interoperability standard. A draft of the standard is expected by year's end. Young said a finished version could be in place before next summer's travel season starts.

Currently, a passenger who has an electronic ticket has to convert to a paper ticket from his initial airline if his flight has been canceled and he wishes to switch to another carrier. Airline employees must also fill out a handwritten "flight interruption manifest" for each ticketholder who's looking to rebook elsewhere.

With an XML standard, Young said, a passenger's electronic ticket could automatically be transferred to another airline's system.

"We want to create an environment where we're treating our electronic customers better than our paper-ticket customers, which is certainly the opposite of what it is today," Young said.

Al Lenza, vice president of distribution planning at Minneapolis-based Northwest Airlines Inc., said 67% of his company's domestic fliers use electronic tickets — making it imperative that the transferability problem be solved. At the conference, executives from Chicago-based United Air Lines Inc. and Fort Worth, Texas-based American Airlines Inc. also pledged their commitment to fixing the problem.

Centralized System

In a separate attempt to solve the problem, IBM just completed a centralized database that air carriers can share to handle electronic-ticket transfers, though the company has yet to sign up subscribers.

One strength of the centralized system would be that airlines could work in hosted environments that obey their business rules, without making major changes to their in-house technology, said Patti Jones, IBM's vice president for global travel distribution. The centralized system would also provide flight availability information for other carriers.

Young noted that the IBM system wouldn't eliminate the need for airline workers to fill out paperwork. The XML standard would leverage technology being put into use at every major airline, he added.

Young acknowledged that the constant stress put on the air transit system this summer helped persuade airlines to seek a long-term fix to the problem of transferring electronic tickets.

The record number of cancellations "was horrible for the industry, and it did actually create a lot of impetus to do this," Young said. "We need to find a way to make [transferring electronic tickets] easier for our passengers and for ourselves." ▶

MORETHIS ISSUE
For more news about the travel industry, see page 24.

Virtually Unequal

Despite the fact that more than half the domestic fliers on most large airlines travel using electronic tickets, the industry has yet to develop a common approach for handling the tickets. Here are some of the hurdles that need to be cleared:

■ Each electronic ticket is created within a proprietary system **designed by the host airline.** For example, the codes that identify the passenger information on a Delta flight will not work within United's computer system.

■ Airlines have built ticket-sharing procedures only within their business alliances. When a passenger needs to switch to a competing carrier on a competing route, airlines must **convert electronic tickets** to paper to engage in a transaction.

■ Prior to this year, the only way to share electronic-ticket information among airlines was for a carrier to **build a connection** to each partner with which it intended to do business – a costly and time-consuming process.

FAA Again Under Scrutiny for Computer Security Failings

Lack of background checks criticized

BY PATRICK THIBODEAU
WASHINGTON

The Federal Aviation Administration (FAA) continues to face harsh criticism in Congress for failing to do background security checks on many of its contract workers, some of whom were hired to conduct penetration testing of the agency's computer systems.

The FAA's computer security practices were again faulted in a report by the General Accounting Office (GAO) that was released last week at a House Committee on Science hearing. The report — the third issued on the matter by the GAO since late last year — reiterated allegations that the FAA is at risk of "undue exposure to intrusions and malicious attacks on its facilities, information and resources."

At the hearing, James Sensenbrenner (R-Wis.), chairman of the Committee on Science, charged that the FAA is putting national security at risk by not performing appropriate background checks on foreign nationals hired from countries that "harbor ill will" toward the U.S. "These unknown individuals have been allowed to gain knowledge about FAA's sensitive computer codes and systems," Sensenbrenner said.

He added that the "most shocking" security lapse by the agency has been its use of contractors without security clearances to test the potential for hackers penetrating the FAA's systems. "These are the people who are using their best efforts to try to penetrate the system," he said.

FAA administrator Jane Garvey acknowledged the problems cited by the GAO and said the agency is correcting them. But she also told the committee that air traffic control systems are safe and have numerous built-in redundancies that could thwart attacks. "We believe we have a very strong and a very secure system," she said.

Still Needs Improvement

An earlier GAO report, released in the spring, said the FAA had made progress in improving its computer security policies and procedures since an initial review was done last year. But, the GAO added, the FAA still needs to do more, including the completion of required background checks "for a substantial number of contractor employees."

Like its predecessor, the report released last week acknowledged the progress the agency has made but said many areas of concern remain. For example, the report said the FAA's own penetration testing and vulnerability assessments "demonstrate significant areas of weakness."

But the report, citing security concerns, didn't disclose details about where those problems lie. The Committee on Science may hold a closed-door hearing in the future to get more specific information from the GAO.

At last week's hearing, Kenneth Mead, inspector general at the U.S. Department of Transportation (DOT), testified that the FAA's air traffic control system is "relatively immune" from outside attacks because of its physical isolation from the rest of the agency's computer applications. But, Mead added, the current level of security may be undermined by the FAA's massive program to modernize the mainframe-based air traffic control system.

Under that $1 billion-plus project, Mead said, the systems that manage air traffic control will be linked to administrative systems at the FAA, possibly opening them up to wider access. "Until the FAA gives assurances that this integrated network won't compromise data security, we don't think the FAA should go forward with that plan," he said.

Mead cited vulnerabilities with DOT systems not run by the FAA as evidence of systemic problems with open systems. For example, a team reviewing security at the DOT was able to gain access to 270 computers via an Internet connection, Mead said. Another 900 systems were deemed to be vulnerable to attack by insiders, he added. ▶

AT A GLANCE

Grounded

The FAA faces a number of computer security problems, according to the GAO, the government's watchdog agency:

Systems: Penetration testing has exposed weaknesses.

People: Some contractors working on mission-critical systems don't have security clearances.

Physical. The FAA needs to ensure that its facilities are physically secure.

Catalog Retailers Bank on Multichannel Advantage

Fulfillment, customer service skills gain new appreciation as dot-coms flounder

BY CAROL SLIWA
SAN DIEGO

NOW THAT the complexities of running a retail business on a budget have finally hit the dot-coms, there is renewed appreciation for their seasoned counterparts in the physical world — particularly those skilled in catalog operations.

But the National Retail Federation's NRF.com conference held here last week drove home the point that traditional merchants need to do even more to exploit their multichannel assets, as early studies show that customers who shop or browse in more than one channel tend to spend more money with one retailer.

At least for the near term, catalog retailers may be in the best position, several analysts said. They not only benefit from extensive customer data, but also never had the hassle of setting up a call center or a fulfillment center to handle the vagaries of picking and packing small quantities of items to be shipped to individuals, compared with trucking crates of goods to stores.

Because of that, "we've been able to focus on building our Web site infrastructure," said Paul Pappajohn, president of e-commerce at Dallas-based J. C. Penney Co. He noted that the company's 14 telemarketing centers typically handle 1 million inquiries by phone or e-mail per week, and its five 2 million-sq.-ft. fulfillment centers processed 68 million orders last year.

Against the advice of hired consultants, J. C. Penney used "brute force" to make the company's entire assortment of more than 260,000 stock-keeping units available to its online customers, said Ron Hanners, executive vice president of infrastructure and technology for J. C. Penney's online site.

Hanners said putting in a heavily customized enterprise content management system with assistance from Pleasanton, Calif.-based Documentum Inc. "wasn't without pain."

"There's very little about retail that's easy," he said, noting that staffers had to deal with more than 60 databases with content, product, customer, pricing, vendor and legal information. The project began 18 months ago and won't be finished until next year's holiday season.

Other "mammoth projects" at J. C. Penney include creating a singular customer history among in-store, catalog and online channels; a Web publishing system that merchandisers and marketers can use; and near-instant inventory checks. Those projects also won't be completed before the holidays next year.

Even a seemingly simple task such as letting customer service representatives take e-mail addresses over the telephone can prove challenging. Bill Bass, a senior vice president of e-commerce

BILL BASS says Lands' End added a new database for e-mail addresses

at Lands' End Inc. in Dodgeville, Wis., said his company's homegrown legacy systems couldn't accept the additional field, so staffers built another database to work around the problem.

But that's less taxing compared with the hurdle Lands' End would have faced to set up an online fulfillment operation if it didn't already have one in place. The company has 3,500 experienced customer service representatives and an in-house UPS operation in its massive warehouse that can

ship second-day air for the same cost as slower service because of the volume.

Target Corp. in Minneapolis acquired a Minnesota distribution company skilled in catalog fulfillment to provide the back end for its Internet operation.

But while the acquisition gave Target the "advantage of speed" to work on gift registries and other Web applications, Gerald Storch, Target's president of financial services and new businesses, said he realizes that the cataloger's advantage is temporary. "Wal-Mart's a great logistics company, and they can build a pick-and-pack distribution center and run it well. It's not rocket science," Storch said.

Carol Ferrara, an analyst at Gartner Group Inc. in Stamford, Conn., said she expects the catalog retailers' advantages will be short term. It will be perhaps another two years before other retailers catch up with their multichannel infrastructure, Ferrara said. ▶

Questions Remain About ETrade Security

Brokerage claims leaks plugged, but analysts skeptical

BY ANN HARRISON

Analysts continue to raise questions about the security of customer data at ETrade Group Inc. after the company plugged a hole in its password storage software last week.

The online brokerage, in Palo Alto, Calif., installed what it says is a more secure version of the password storage software after security researchers discovered that customer accounts were vulnerable to outside access.

According to the firm, a flaw was found in the scrambling techniques used to store password data on cookies used by clients' computers. An ETrade spokeswoman said the problem has been corrected and no customer data was released.

But ETrade password information stored on cookies could still be vulnerable to a "cross-site scripting attack" discovered by researcher Jeffrey Baker, who posted a description of the exploit on the BugTraq mailing list. In his posting, Baker said he alerted ETrade to the problem a month earlier, but when the company failed to take action, he felt compelled to alert customers.

"ETrade seems to have rolled out a new cookie scheme over the weekend," wrote Baker last week. "But it isn't going to do one bit of good unless they plug the dozens of cross-site scripting problems littering their site." After Baker's original Sept. 22 posting, programmer Marc Slemko posted a program that unscrambled ETrade account passwords. There have been no reports of the exploit being used to access accounts.

Because customer cookie information changes each time a user accesses the site, the passwords may be vulnerable for only as long as the user is logged in, said Elias Levy, chief technology officer at security portal SecurityFocus.com in San Mateo, Calif.

While the cookie information may give attackers unauthorized access to account data, Levy adds that ETrade's new scrambling schemes may secure other passwords needed

to actually make stock trades.

Users of the cross-scripting attack create a Web link that delivers access to cookie password information when clicked on by unsuspecting ETrade customers. According to Baker, the cross-scripting attack, which can be delivered via links in e-mail or Web sites,

already afflicts other sites. He suggested several measures that customers could take to protect their account passwords (see chart).

ETrade didn't respond to repeated requests for comment on the cross-site scripting attack. But ETrade customer Jim Sander, who identified himself as a systems network and security administrator, aired his concerns on the site's customer discussion area Sept. 26.

"What are they going to do when someone steals account information and makes large wire transfers to foreign banks?" he asked. "Why haven't we customers been informed?"

Sander noted that when Western Union Holdings Inc. experienced security problems on its site last month, it at least alerted its customers to the problems. "By remaining silent, [ETrade] is not serving its customers, continuing a long list of customer service problems," wrote Sander. "I am sure I speak for thousands of customers when I say that more than anything else, I value good service — and I vote with my feet. [ETrade] won't get a second chance." ▶

IDG News Service correspondent Elinor Abreu contributed to this story.

BRIEFS

GAO: H-1B Program Needs More Oversight

The H-1B visa program is vulnerable to abuse because federal agencies don't have the legal power to examine it, the General Accounting Office said last week in a report. The GAO said the U.S. Department of Labor is limited to ensuring that the employer's application form has no obvious errors. The Labor Department can't verify whether the employer's statements about labor conditions, such as wages paid, is correct. The GAO recommended expanding the Labor Department's authority on H-1B matters. The program allows firms to hire skilled foreign workers for up to six years.

Amdahl, Oracle Partner

Sunnyvale, Calif.-based Amdahl Corp. and its Edison, N.J.-based subsidiary DMR Consulting Group Inc. last week announced an application service provider alliance with Oracle Corp. Under the deal, Amdahl and DMR will provide hosting and integration services for Oracle's E-Business application suite for a variety of operating system environments.

Dell Cuts Server Prices

Dell Computer Corp. announced last week that it has reduced the prices of its entire line of PowerEdge servers in the U.S. by 14% to 47%. The Round Rock, Texas-based company also announced reductions of up to 15% on Dimensions desktop PCs and 12% on Inspiron notebooks. Dell said its most dramatic price reduction appears in the enterprise-level server segment, with the fully configured, four-processor PowerEdge 6400 being reduced from $29,195 to $15,341.

Short Takes

Santa Clara, Calif.-based EXODUS COMMUNICATIONS INC. is acquiring GLOBALCENTER INC., a unit of Hamilton, Bermuda-based GLOBAL CROSSING LTD., for $6.5 billion in stock. . . . MICROSOFT CORP. announced Mobile Information 2001 Server, an applications server for delivering and developing real-time mobile data services for mobile devices. The product is due next year.

Slippery Road Ahead For Wireless Location Apps

Analysts say loss of privacy a potential hazard for users, big liability for providers

BY MATT HAMBLEN
CHICAGO

WORRIES about loss of privacy caused by the use of wireless devices will rock the budding wireless location industry, analysts and users warned last week.

"I think there are huge land mines with wireless ahead," said Alan Davidson, staff counsel at the Center for Democracy and Technology in Washington, a public interest group that works with industry and government on social issues involving technology.

The issue is especially acute with wireless vendors preparing location-based applications that will allow carriers and marketers to track the location of users and send them alerts about sales on services or personal goods, he said.

Compared to the privacy uproar over the wired Internet in recent years, privacy concerns over wireless will be "exponentially bigger," Davidson said at a conference of the Personal Communications Industry Association here.

"The first time somebody steals location information on the whereabouts of a kid and he goes missing, there will be a backlash and lawsuits," he added. Or a phone company employee could have a crush on a woman with a cell phone and use the purloined data to follow her around, he said.

While vendors downplayed the potential hazards of location-based services, market analysts Risto Perttunen and William J. Passmore at New York-based McKinsey & Co. said that the concerns are real and that the industry isn't addressing the issue sufficiently.

"People have not realized the value of location services and have not realized the loss of privacy involved," Perttunen said.

For a company considering rolling out wireless applications to consumers or workers, having the ability to track the whereabouts of customers or employees will require a higher level of corporate readiness, Passmore said.

"Companies need to realize they will be scrutinized by all sorts of groups," he said.

The Federal Communications Commission (FCC) has set Oct. 1 of next year as the deadline for carriers to begin providing location services for wireless phones, which would help public safety officials respond to emergency calls from cell phones to find someone lost or injured in a car crash. Ironically, the public safety protections of that FCC provision could cause privacy and safety concerns of their own, some analysts said.

"We ought to build systems that encourage 911 location ser-

On Location

The FCC **has set rules for wireless carriers** to provide emergency dispatchers with information on the location from which a wireless call is made. Recently, the FCC delayed the requirement for carriers to begin **selling and activating** automatic location identification wireless phones from **March 1, 2001, to Oct. 1, 2001.**

SOURCE: FEDERAL COMMUNICATIONS COMMISSION, WASHINGTON

vices but that aren't just personal tracking systems," said Davidson. The location of a wireless user could fall into the hands of the police, threatening the innocent, he added. ▶

Microsoft Wins Key Battle

Supreme Court's pass on case buys time

BY PATRICK THIBODEAU
WASHINGTON

Microsoft Corp.'s antitrust fight against a breakup of the company was helped in a big way last week by the U.S. Supreme Court when it rejected government arguments that the case deserved an expedited review by the nation's highest court because of its "immense" economic importance.

The immediate impact of the Supreme Court's decision is to prolong a case that has been in litigation since 1998, when 19 states and the U.S. Department of Justice filed a lawsuit against Microsoft accusing it

AT A GLANCE

Ticktock

The U.S. Court of Appeals wants to move quickly on the Microsoft case. Within hours of the Supreme Court decision last week to not expedite the case, the appeals court issued a scheduling order.

What's up this week: Both sides must propose a briefing schedule today, with replies due Thursday.

How long will this take? Best estimates say the appeals court will conclude its work by the middle of next year.

Final decision: The Supreme Court should get the case by next October, with a final decision due by mid-2002.

of anticompetitive behavior.

With a final decision now perhaps two years away and a breakup beginning to appear unlikely, Bruce Levin, information technology manager at Faulding Inc., an Elizabeth, N.J.-based generic pharmaceuticals maker, said the case will have no affect on his IT planning. "It will have virtually no impact on the deployment of technology at our company," he said.

Levin isn't alone in that belief. "I think that the time frame could be such that by the time they get around to a decision, [the case] will be a moot point," said Joe Muehlethaler, information systems manager at Manitowoc Cranes Inc. in Manitowoc, Wis.

The case will now go to the U.S. Court of Appeals for the District of Columbia, a court that may be a far friendlier venue for Microsoft than trial Judge Thomas Penfield Jackson's courtroom.

The company's reaction was muted. If Microsoft had just received, in effect, a home-court advantage, it wasn't going to show it and risk angering the appeals court. Microsoft spokesman Jim Cullinan simply reiterated what the company has said all along: that it remains "confident of our case on appeal." The Justice Department was similarly restrained and said through a spokesperson that it's looking forward to presenting its appeal

as expeditiously as possible.

Seven judges will hear the Microsoft case. Two of those judges, Stephen Williams and Raymond Randolph, were part of a three-judge panel that gave Microsoft a significant win in its antitrust battle in 1998 by reversing an injunction issued by Jackson that prohibited Microsoft from bundling its Web browser with Windows 95.

The appeals court "is likely to be sympathetic to a number of the arguments Microsoft will make," said William Kovacic, a George Washington University law professor. Microsoft "can have a strong measure of confidence that they will avoid a breakup."

Involving the appeals court in the case "could only lead to [Microsoft's] advantage," because the company will have more opportunity to argue its case before it inevitably winds up in the Supreme Court, said Yee Wah Chin, an antitrust attorney at Mintz, Levin, Cohn, Ferris, Glovsky and Popeo PC in Washington.

Time helps Microsoft. "Each day brings new technological and economic developments that arguably render this case less relevant to protecting competition," said Hillard Sterling, an antitrust attorney at Gordon & Glickson LLC in Chicago.

Michael Cusumano, an MIT management professor and *Computerworld* columnist, said the urgency of the case has long since passed. "The time to have taken strong action on this issue was maybe three or four years ago," he said. ▶

NEWS

Sun Banking on Systems Powered by UltraSPARC-III

Overcoming migration woes before reaping benefits of new line is key, analysts say

BY JAIKUMAR VIJAYAN

SYSTEMS based on Sun Microsystems Inc.'s new UltraSPARC-III microprocessors should give users substantially better performance than Sun's current products, analysts said.

But enterprise users will have to wait six months to a year before the high-end Ultra-SPARC-III servers begin to ship. And even then, they will need to swap out existing systems and migrate applications to the Solaris 8 environment before they can take advantage of the enhanced performance.

Sun last week announced the Sun Blade 1000 workstation and a low-end server called the Sun Fire 280R, based on 750-MHz and 900-MHz versions of its UltraSPARC-III chip, respectively. The company also announced a low-end version of the Sun Blade based on a 600-MHz chip. That version will be available only through auction on San Jose-based eBay Inc.'s site.

More Products in Mix

The systems offer more than double the performance and capacity of comparable models on the market today, said Shahin Kahn, a vice president at Sun. They are the first in a line of systems based on the UltraSPARC-III, which is Sun's second-generation 64-bit chip architecture and third-generation UltraSPARC line.

Sun will release a series of workstations and servers based on these chips in the next few months. Topping off Sun's new Star Fire line of servers will be the Star Cat server, which will initially support up to 72 processors and more than 100 processors in later configurations.

By spreading out its product releases over the next few months, "Sun's emphasis is much more on continuity rather than technology," said

Shao F. Wang, an equity analyst at Stein Roe & Farnham Inc. in New York. "The idea is to show users that there is a future to their investments in Sun."

Meeting Demand Is Goal

But it's important that Sun executes on time and delivers the products within the next few months, said Mike Otto, an account executive at Innovative Systems Design Inc. in Edison, N.J.

"It's a credibility issue. If you set an expectation and don't execute, that's a problem for

me as a user," he said.

The much higher bandwidth and interconnect speeds supported by the new chips make it impractical to use them in existing boxes, said Kahn. As a result, users won't be able to do board upgrades and will have to move wholesale to new boxes if they want to take advantage of the performance offered by UltraSPARC-III.

However, such box swaps aren't unusual in the high-end server space, said Tony Iams, an analyst at D. H. Brown Associates Inc. in Port Chester, N.Y. Intel Corp.'s upcoming IA-64 architecture, for instance, will involve similar fork-lift upgrades for users on existing high-end Intel boxes, said Kahn.

The boxes come at an important time for Sun. Much of the company's near-total dominance in the high-end Unix server space over the past few years has been based on the

superior performance and technology of its E10000 system — more than 3,000 of which have been installed so far, at an average price of more than $1 million.

But systems such as the recently announced Superdome from rival Hewlett-Packard Co. could begin to narrow that performance gap if Sun doesn't start shipping the new servers during the next few months, Iams said. ▶

Sun's New Software and Services

New software and services for Sun's UltraSPARC-III systems include:

Sun Remote Services Net Connect software: A self-service, Web-based system-monitoring tool. Available for free download in January.

Sun Grid Engine software: Designed to let users speed application performance by letting them optimally access and use idle computer resources in a network. Available for free download.

Solaris 8 migration services: Readiness evaluation service, application fitness and implementation services.

Big-Name Web Sites Lack Basic Guidelines

Giga study finds fed standards not always used online

BY DAN VERTON

A survey released last week by industry research firm Giga Information Group Inc. found that most of the Web's top corporate and e-commerce sites don't meet some basic industry and government standards for access, navigation and customer interaction.

As part of its Web Site Score-Card study, Cambridge, Mass.-based Giga reviewed 200 major Web sites and found that most lack basic yet fundamental features such as privacy statements, action links that let users interact with the site, global navigation aids, text-only access, search tools and other accepted methods to assist disabled visitors.

Failure to include such features on Web sites can result in frustrated customers and lost business for companies, said Steve Telleen, head of Giga's Web Site ScoreCard service and author of the study.

"Every Web site should do a set of basic things. We couldn't

find a single site that had everything," Telleen said. "The types of things that were missing are generally easy fixes, but at the same time, they are the structure of the Web site."

Giga compared some of the Web's top sites with standards recognized by the Federal Trade Commission (FTC), the Americans With Disabilities

Not Found

66% of home pages failed to include action links such as how to buy online, learn more about specific products or manage personal accounts

60% failed to provide a link to a privacy policy from the home page

50% didn't have a link to a site map from the home page

43% were missing basic navigation aids, including text navigation aids for nongraphics users, global navigation bars and links back to the home page

39% failed to include a link to a site search tool

35% were missing an employment link

16% didn't have a corporate profile link

NOTE: INCLUSION DOESN'T MEAN SITE WAS DEFICIENT IN ALL AREAS.

Act and the Standards for Internet Commerce, as well as published results from leading usability studies.

"Companies are failing to adhere to some of the most basic standards on the front end of their e-businesses," said Telleen. "Some companies do fairly well, and some are completely lacking. This study gives them something to make decisions on. They can look at it as a scorecard or as an analytic tool."

A spokesman for the FTC, which enforces consumer protection laws, said that although the commission hasn't written any specific regulations for online companies, "everything we require for brick-and-mortar businesses, we require for online companies." For example, online consumers must have the option to cancel an order if the vendor can't ship a product in the time advertised, the spokesman said.

Likewise, the Americans With Disabilities Act of 1990 prohibits discrimination on the basis of disability in both the private and public sectors. Examples of Web aids for disabled people include color-coding for the visually im-

paired and the option to use a keyboard for those who can't operate a mouse.

New Emphasis

Tom Harms, geographic operations manager at Hewlett-Packard Co.'s Web site, HP.com, said HP this week will launch a complete redesign of its Web site, with a new emphasis on access for the disabled and greater navigation help for international customers. HP.com was one of the sites reviewed by Giga.

"In terms of access for the disabled, most companies have fallen down on that," said Harms. "A large part of our new look-and-feel effort was to make the pages conform to the Americans With Disabilities Act. It's been deemed highly important."

Gail Houck, CEO and president of Alexandria, Va.-based Houck and Associates, a Web development consulting firm, said a shift is occurring in the online world of corporate America. In the past, Houck said, companies were more focused on the design of their Web sites, rather than the functions.

"Companies are finally starting to understand that more than one department has to be involved in designing a Web site," she said. ▶

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Depending on where your company sits at this moment in time, the advent of broadband could be either an incredible opportunity or a technical debacle. Either way, it's a challenge you will have to be up for to succeed. It's exactly why companies that need broadband to work are bringing Aperian into the picture.

As the foundation, we have built several state-of-the-art, managed data centers that are strategically located directly on the Genuity and MCI WorldCom Internet backbones, the two largest IP networks in the world.

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BRIEFS

Oracle Software Targets IBM Users

Oracle Corp. is making it easier for users to run its database software on IBM's S/390 mainframes with a new technology called Operating System Dependent Interface, according to company officials. The technology, which was announced last week, will ship with Oracle8i Release 3 within the next month.

Study: Publishers Need To Revise Biz Models

Both digital rights management systems and lawsuits aimed against alleged piracy won't stop the unauthorized swapping of digital content on Web sites such as Napster, according to a report from Forrester Research Inc. in Cambridge, Mass. Instead, publishers must develop new business models to give consumers access to content, according to the report. Forrester predicts that as artists and authors break away from publishers and the use of file sharing increases, record labels and book publishers could lose $3.1 billion and $1.5 billion, respectively, by 2005.

3Com CEO Resigning

Six months after a company reorganization aimed at reversing a recent string of financial losses, 3Com Corp. last week announced that CEO Eric Benhamou is leaving his post effective Jan. 1. Benhamou, who has led the Santa Clara, Calif.-based networking company for 10 years, will remain as 3Com's chairman. Succeeding him as CEO will be Bruce Claflin, who was named chief operating officer and president by Benhamou in 1998.

Med Site to Cut Staff

Atlanta-based WebMD Corp. will lay off 1,100 employees from its workforce of 6,000 as part of a restructuring to streamline the online health care site's recently acquired companies. The layoffs will occur by the end of next year. WebMD will also consolidate offices and data centers, reduce marketing and promotional expenses and divest its plastics and filtration technologies subsidiaries, company officials said.

Volvo to Market Its New Vehicle Via AOL

'Bold' campaign to cost half of traditional promotions, but it may hurt automaker

BY LEE COPELAND

VOLVO CARS of North America Inc. in Rockleigh, N.J., an automaker popular among well-to-do and safety-conscious parents, wants to tap into a wider market by launching an exclusive Web promotional campaign with America Online Inc.

The campaign, which will offer each AOL subscriber who configures the car online $2,100 worth of free options, will cost about $10 million, or half the cost of a traditional promotion, the company said.

Volvo said it plans to promote its new S60 luxury sedan on Oct. 15 using its Web site (www.revolvolution.com), AOL and a few print ads in car-buff magazines. Unlike Volvo's two other vehicle launches earlier this year, the automaker will bypass advertising in most national print media, on television and radio and with other Internet service providers and Web sites.

Analysts labeled the launch a risky strategy that will nonetheless serve as a litmus test for Dulles, Va.-based AOL and the viability of online advertising.

Bold and Risky

"It's a very bold move by Volvo to use the Internet solely to market cars," said Joe Barker, an analyst at market research firm CSM Worldwide Inc. in Northville, Mich. "Typically, automakers want as much exposure as they can get, and by using print and television, you can do that," he added. "By using the Internet only, they're taking a risk of losing exposure."

Any of AOL's 24 million subscribers who configure their vehicles online will purchase them through local dealers. These same options won't be available to car shoppers who use other Internet service providers.

Volvo, a Ford Motor Co. sub-sidiary, hopes the novel campaign will generate 40,000 S60 vehicle sales, or roughly one quarter of annual sales, and also cut advertising costs. Volvo, which typically releases a new vehicle model every few years, has introduced two vehicles this year at a cost of $20 million per launch campaign.

Phil Bienert, Volvo's manager of electronic business, said the launch campaign, called Revolvolution, will cost about $10 million, which is half as much as the other two media blitzes. "We wanted to have a launch that was sustainable over a number of months," said Bienert. The AOL deal will run until next March.

The deal sounds "great for AOL," said Jim Nail, an online advertising analyst at Forrester Research Inc. in Cambridge, Mass. "[AOL gets] to give its members special deals, but I'm not sure what it gives Volvo, because it ties one hand behind the back [of dealers] because they cannot make the same offer in showrooms." ▶

IBM Ready to Launch First 64-Bit Mainframe, Freeway

BY JAIKUMAR VIJAYAN

IBM this week will announce Freeway, its next-generation System 390 mainframe. The server will use IBM's first 64-bit mainframe processors and come with greatly expanded memory capabilities for boosting application performance.

Each Freeway server will be capable of supporting up to 16 general-purpose processors plus four processors dedicated to specific tasks such as I/O processing, said John Phelps, an analyst at Gartner Group Inc. in Stamford, Conn.

The expectation is that each processor — or engine — will deliver 250 MIPS to 270 MIPS, compared with the 200-MIPS rating of IBM's current Generation 6 mainframes.

Pricing Efficiency

One of the most crucial aspects of the server will be its support for new pricing models, Phelps said.

The server will enable users to tie application workloads to specific processors or sets of processors in a way that is verifiable and measurable by both users and software vendors.

This should make it possible for software vendors to charge for their software based on the portion of the mainframe that it runs on rather than on the capacity of the whole system, which is its current practice.

If vendors accept the technology, Freeway could pave the way for much lower, usage-based mainframe software pricing in the future, Phelps said.

From a pure technology perspective, one of the most significant enhancements of the new server is its support for greater virtual and main memory, said one user, who wished not to be identified.

The expectation that the new servers will support anywhere from 128GB to 512GB of real main memory initially — with 64-bit virtual-memory support becoming available later — should greatly expand on the 2GB real-memory support available on current 31-bit mainframes, the user said.

As a result, users will be able to run large applications such as databases much faster and with much less complexity than before, he said.

IBM confirmed that it will announce Freeway next week but offered no further details. ▶

Ford Pursues Start-Ups

Ford Motor Co. continued to buy in to select software firms last week with two purchases, including an undisclosed equity stake in Bios Group Inc., an analytical software firm in Santa Fe, N.M.

Ford CIO Jim Yost said the Bios software could become a critical component of the automaker's build-to-order initiatives, because it will assist in analyzing consumer data about vehicle options and configurations.

Ford also plunked down $15 million last week for equity in Captura, a Bothell, Wash., maker of expense-reporting software that it plans to roll out worldwide.

Overall, Ford has about a half-dozen minority equity stakes in technology start-up companies, and it's far from alone in having such arrangements.

Other major businesses, such as automotive leader General Motors

Corp. and technology firms Novell Inc. and Oracle Corp., also use internal equity funds to seed investments in start-ups from which they license products.

"The start-ups get some capitalization, and we get a more closely tied interest with them and a part in figuring out where they are going," said Yost.

Analysts said these types of investments may improve technological ties but won't have much impact on Wall Street.

"This type of investment is not something that will make a major impact on how investors value the company," said Efraim Levy, a financial analyst at S&P Equity Group in New York. "Equity investments are positive, but it's rarely going to be the case that a small equity investment changes the stance of a company."

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The great e-business shakeout is well under way. For those who didn't make it, our condolences. At least the end was quick.

For those who have made it, who broke the code and figured out how to build a truly viable e-business, our heartiest congratulations.

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Which explains why it's BEA's market-leading platform that powers Nokia, Chase Manhattan, FedEx, Amazon.com, United Airlines, Wells Fargo, E★TRADE, Qwest and over 6,500 other successful e-businesses. Find out how we can help yours. Visit us at www.bea.com.

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HR Roles Growing as Labor Market Shrinks

IT tools are helping human resources play more strategic part in business operations

BY JULEKHA DASH
LONG BEACH, CALIF.

HUMAN resources managers are beginning to use information technology to reinvent themselves from paper pushers to business partners, according to participants at last week's Human Resources Technology Conference here.

As companies confront a skills shortage, they value the strategic role that human resources managers can play in hiring and retaining workers, according to Jenni Lehman, research director at Gartner Group Inc. in Stamford, Conn.

"At the highest level, organizations are realizing that the 'soft issues' make a difference," she said.

And while human resources managers have always played some strategic role in organizations, many companies now have the capability to automate or outsource administrative functions, freeing up human resources to tackle more complex tasks, said Naomi Bloom, managing partner at human resources consultancy Bloom & Wallace in Fort Myers, Fla.

For instance, at Fresh Del Monte Produce Inc. in Coral Gables, Fla., human resources is using a business intelligence application from Oracle Corp. to help business managers determine which hiring methods are the most successful and cost-effective.

Quantifiable Goals

Del Monte's approach has been to break down key human resources functions into areas such as recruitment or training and identify quantifiable business goals for those areas. So, if there was a goal to reduce turnover by 10%, human resources and line managers could use the business intelligence tool to capture turnover data and determine which strategies best achieve that.

Having implemented the application in the Americas, the company is targeting the U.K. and South Africa this month and the Asia/Pacific region next year, said Louie Tenazas, Del Monte's vice president of human resources.

But before a firm can implement technologies that reduce its administrative burden or report the success of its hiring strategies, human resources executives need IT support, said conference attendees.

During a break, one human resources executive complained that the IT department in her company is risk-averse and won't agree to beta-test new human resources software, even though it can provide cost-effective access to the latest tools.

Human resources needs to get support from the CEO and other senior executives before IT will support the business intelligence tools that a human resources manager may want, said Kazim Isfahani, a senior analyst at Cambridge, Mass.-based Giga Information Group Inc. ▶

Vietnam

"Any veteran would appreciate knowing that our country would care enough to come looking and remove us from a mudhole and bring what was left back home," said Warner Britton, a retired Air Force pilot who flew helicopters similar to Vandegeer's in Vietnam. "But more important, the program gives some hope to families who lost these men."

Byrd said the seven water and land recovery operations on Koh Tang for remains from Vandegeer's helicopter started in 1991 and yielded a large number of "commingled" remains. Besides Vandegeer's remains, CILHI recovered what it believed to be remains from 10 Marine infantrymen and two Navy corpsmen from the 2nd Battalion, 9th Marine Regiment, on board Vandegeer's helicopter, known as Knife 31.

The number of personnel involved in the crash, as well as the large number of bone fragments, "presented a challenge to the science.... The more remains you have at a site, the difficulty goes up dramatically," Byrd said. Six Marines have also since been identified, and identifications of the two Navy corpsmen are pending.

Privacy statutes preclude Byrd from discussing individuals, but sources outside the U.S. Department of Defense confirmed the identification of Vandegeer and his burial date.

The lab tapped into the smarts of a forensic computer program developed at the University of Tennessee, called ForDisc, which automates the process of matching skeletal remains, Byrd said. ForDisc is based on an extensive skeletal database that comprises samples of racial and body types found throughout the population, Byrd said, and allows scientists from CILHI to quickly determine the probability of whether a femur of a certain length matches a tibia of a certain length, for example. Recent new methodology extends that capability to bone fragments as well.

This is a key piece of software, because the CILHI scientists work "blind" when they begin analysis of skeletal remains, with no prior knowledge of the physical characteristics or even the number of individuals involved in an incident, according to a command briefing. It's also more useful than DNA in cases where the number of individuals involved raises the possibility that the same base pair sequence will show up in more than one set of remains, Byrd said.

But ultimately, it is often dental records that affirmatively identify remains. "The anatomy of teeth, cavity patterns, restorations and extractions can lead to the identification of an individual," much like fingerprints can, said Army Lt. Col. Cal Shiroma, a CILHI forensic odontologist.

CILHI maintains an extensive dental database, called the Computer Assisted Post Mortem Identification system, which contains the dental records of all U.S. personnel missing in Asia. Shiroma can scan in as many as 30 X rays of a recovered tooth and use the database's search engine to generate candidates for a match. A computerized dental radiography system then fine-tunes that match, Shiroma said.

Vandegeer's remains were first identified in 1995, and the process was completed last November. Independent authorities then spent nearly one year confirming those results, sources said.

CILHI's computer and communications support is provided by Resource Consultants Inc. in Waipahu, Hawaii. The records of the missing servicemen from three wars, as well as data related to recovery operations such as maps, aerial photographs and scientists' field notes, currently occupy 30GB of storage space, on-site consultant Gary Stephens said.

A gradual thaw in U.S. relations with North Korea has resulted in an increase in recovery missions in that country, said Stephens, and the command has started a crash imaging project to scan into a database literally millions of pages from the records of the Korean War MIAs, a project that in its infancy has already consumed 39GB of storage space.

"I believe what we do here is meaningful to the American people, especially the families [of the men missing in action]," Byrd said. ▶

Dan Verton also contributed to this story. Brewin, *Computerworld's wireless and mobile reporter, landed in Da Nang, Vietnam, with the 2nd Battalion, 9th Marine Regiment, on July 4, 1965.*

Central Identification Laboratory Hawaii

■ Established May 1976, based at Hickam Air Force Base, Oahu, Hawaii. Referred to as CILHI.

■ Chartered to recover and identify U.S. MIAs from all wars, concentrating on World War II, Korea and Vietnam.

■ 220 personnel, including anthropologists and archaeologists, casualty data analysts and forensic ondontologists.

■ Operates 13 field recovery teams, which this year have conducted 49 operations in Southeast Asia (Cambodia, Laos and Vietnam), eight World War II missions and six in North Korea. Field teams deployed on an average of more than 180 days per year.

■ Computer resources consist of 200 networked PCs hooked into 12 servers on a 100M bit/sec. LAN.

■ Casualty database consists of records on 78,000 World War II MIAs, 8,000 Korean War MIAs and more than 2,000 Vietnam War MIAs, taking up 30GB of storage space.

■ More than 130 successful identifications of MIAs this year.

WEB SITE: *www.cilhi.army.mil*

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Feds Step Up 'Revolutionary' Quantum Computer Funding

Development years away, but warnings raised if U.S. lags in computing research

BY PATRICK THIBODEAU
WASHINGTON

PREPARING FOR AN eventual post-silicon-chip world, the U.S. is increasing its research spending on quantum computers and other advanced computing alternatives. But foreign governments are doing likewise, and a race to develop new technologies — potentially raising profound implications for computer security — may be beginning.

An award of $90 million in grants for technology-related research by the National Science Foundation (NSF) last month included as much as $8 million for quantum computing, which relies on the behavior of subatomic particles and theoretically could increase processing power exponentially.

The quantum computing research grants are part of a new "revolutionary computing" research effort the NSF is funding.

Five years ago, overall federal support for quantum computing was just $1 million per year. The annual spending figure is now at $30 million, according to the NSF.

The interest in quantum computing is being spurred, in part, by technical limits in existing chip-making material and fabrication equipment that ultimately could nullify Moore's Law, the famous 1965 prediction by Intel Corp. co-founder Gordon Moore that computing power would double every 18 months. Most experts say those limits won't be reached for another 10 to 20 years.

But the creation of new technologies such as quantum computing will take an enormous basic research effort, said Charles Bennet, a research scientist at IBM, who testified during a hearing held here last month by the House Subcommittee on Basic Research.

This is a "time of exceptional need for ingenuity and basic science, because the thirst for progress and for better computational informational processing ability will not dry up," Bennet said.

At the hearing, scientists urged more investment in these areas. Japan is investing about half of what the U.S. is spending on quantum computing, scientists noted, and funding is on the rise elsewhere.

"We are not unquestionably the world's leaders" in quantum computing research, warned Timothy Havel, a lecturer on biological chemistry and molecular pharmacology at Harvard Medical School in Cambridge, Mass.

In quantum computing, a single subatomic particle could represent both a zero and a one, a simultaneous state that may make huge increases in processing power possible. As envisioned, quantum computing will have enormous abilities to factor numbers and potentially to break codes.

National security and the secure functioning of e-commerce transactions are both "dependent on the fact that certain [encryption] codes work," said Richard Lipton, a Princeton University computer science professor who's currently on leave to work at the Georgia Institute of Technology in Atlanta. But that could be jeopardized if another country "secretly discovered a way to build a quantum computer and just didn't tell us," he told the subcommittee.

"They would be reading all our mail, reading probably all the military's mail and the like. This would probably not be good," said Lipton. ▶

The Next Leap

Government agencies are funding basic research projects at U.S. universities and corporations to spur the next generation of computers. It may be decades before commercial systems are developed.

MOLECULAR COMPUTING: Only 6 years old, this field relies on molecules to compute. DNA can store and process information. By using synthetic DNA, scientists have been able to apply these processes to computational problems.

QUANTUM COMPUTING: Relies on the strange behavior of atoms and subatomic particles to develop computing systems. For instance, when an atom isn't being observed (observing it disturbs its motion), it can spread out and behave as if it were in several places at once. These kinds of simultaneous actions are believed to make very massively parallel processing possible.

DOJ Signs Up Team to Review Carnivore

Surveillance system to be checked by Illinois researchers

BY ANN HARRISON

In an attempt to address the privacy concerns surrounding the FBI's controversial and secretive Carnivore e-mail surveillance system, the U.S. Department of Justice last week announced that it has chosen a team of researchers affiliated with the Illinois Institute of Technology in Chicago to carry out a promised technical review of the system.

The DOJ said the team from the IIT Research Institute (IITRI) will be paid an estimated $175,000 to determine whether the computer-based investigative tool contains enough safeguards to ensure that it doesn't invade the privacy of individuals who aren't being investigated by the FBI. The contract signed last week by the DOJ and IITRI specifies that the actual payment will be based on the time and materials needed to carry out the review.

IITRI, a not-for-profit research and development organization, will review Carnivore at a research facility that it operates in Lanham, Md.

The DOJ said the review will begin immediately and is scheduled to be completed in December, after which a report will be made available for public comment. An interim draft report is due to be released in late November.

The DOJ in August issued a request for proposals from universities interested in examining the Carnivore technology after privacy groups charged that the surveillance system could be used to do widespread monitoring of e-mail messages on networks operated by Internet service providers. Government officials said they hope that the independent review will head off calls for the FBI to release Carnivore's source code, which so far has been kept secret.

The review is subject to some restrictions. For example, the DOJ has said Carnivore's source code won't be published as part of the report, and the agency will be able to edit the document. Those conditions spurred some universities, including MIT, Purdue, Dartmouth College and the Supercomputing Center at the University of California at San Diego, to withdraw from the review application process.

Kerry M. Rowe, IITRI's senior vice president and manager of its advanced technology group, said last week that he doesn't believe that the restrictions placed by the DOJ on the research process will compromise the integrity of the data.

"The idea that the DOJ has the final edit does not bother me," said Rowe. "That is the situation anytime you develop a report like this for the government, and they have the right to do it. I have every expectation that this will be a full and open review and that all the data we get will be available to the public."

Rowe added that the DOJ's insistence on background checks for researchers on the project is routine and the inclusion of a nondisclosure agreement barring discussion of the "means" by which the DOJ conducts investigations is also acceptable.
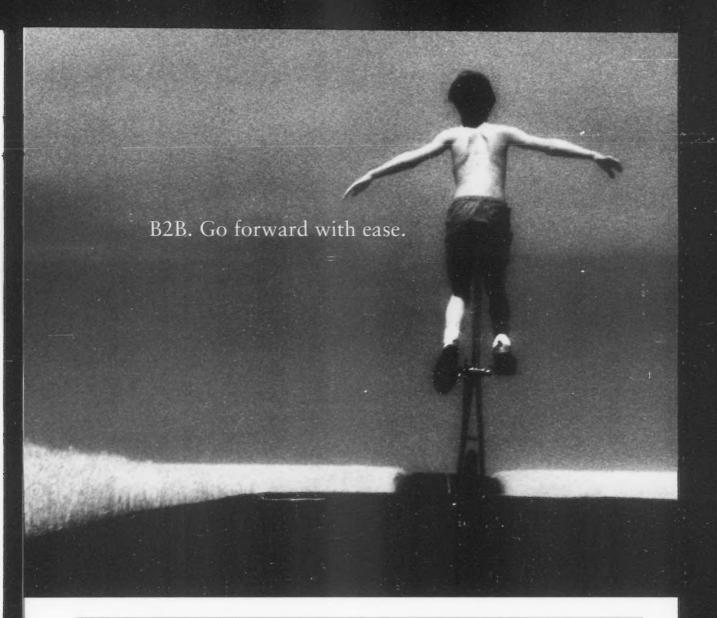
Critics have also condemned the DOJ's insistence on maintaining veto power over members of the review panel, noting that the government could use this as a way to screen out researchers critical of government surveillance. Rowe said he resents suggestions that the IITRI is incapable of conducting an impartial review.

"We are professionals, and we will do a proper and open technical evaluation of this process, period," said Rowe. "This is not putting a rubber stamp on something that we generate."

FBI officials have argued that releasing Carnivore's source code for public review would leave the system vulnerable to attack by suspects who are being targeted in criminal investigations.

Currently, Carnivore is installed by the FBI as a "black box" system that's attached to the networks of Internet service providers, which can't examine or access the system. ▶

AT A GLANCE
Carnivore's Controversial History

April 16 Robert Corn-Revere, an attorney for Internet service provider Earthlink Inc., testifies to the House Judiciary Committee regarding concerns over the system.

July 12 The Electronic Privacy Information Center (EPIC) files Freedom of Information Act request for information on Carnivore.

July 24 The House Judiciary Subcommittee holds hearings on privacy concerns surrounding the e-mail surveillance system.

Aug. 2 EPIC asks a federal judge to force the FBI to release information on Carnivore.

Aug. 9 The FBI refuses to release information on Carnivore, saying it would compromise law-enforcement efforts.

Sept. 26 The Justice Department chooses the IIT Research Institute to conduct a review of Carnivore that the FBI will then edit.

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NEWS

Government Report Finds Few Y2k-Related Lawsuits

But pending claims could mean big awards

BY PATRICK THIBODEAU
WASHINGTON

ONE OF the fears surrounding the year 2000 problem was its potential to result in litigation against companies. But in a report made public last week, the U.S. General Accounting Office said it has identified fewer than 100 federal and state lawsuits that have raised Y2k-related issues.

According to the GAO, only 18 of those suits invoked provisions of the liability-limiting bill passed last year by Congress. When that measure was being considered, some legal experts estimated a possible price tag of $1 trillion in legal costs and damages stemming from Y2k-related suits. Concerns about out-of-control litigation prompted Congress to adopt the controversial Y2k Act, which set a mandatory 90-day cooling-off period before any legal action could commence and restricted the use of class-action lawsuits, among other provisions.

Harris Miller, president of the Information Technology Association of America in Arlington, Va., said the intent of the legislation was to prevent an onslaught of groundless litigation and the diversion of resources earmarked for repairing Y2k problems to fight legal battles.

"That's what the legislation was all about," Miller said. "It wasn't prohibiting anyone from going to court." As a result of the Y2k Act, he added, companies "didn't get sidetracked into a legal firestorm that would have benefited only the lawyers."

In its analysis, the GAO said most of the cases that were filed involved end users who had taken action against a hardware or software vendor to bear the cost of replacing or upgrading existing systems.

But pending Y2k legal claims still have the potential to result in big awards, according to Bruce F. Webster, director of IT Legal Systems at PricewaterhouseCoopers in Washington. Nine of the Y2k lawsuits are from companies seeking reimbursement under an insurance clause known as "sue and labor." The legal argument is that if a company buys sandbags to protect insured property, the insurance company should reimburse the owner for the sandbags because it's a cheaper solution than paying for flood damage, he said.

Firms that have filed lawsuits against insurers include GTE Corp., Kmart Corp., Nike Inc. and Xerox Corp. In total, they represent nearly $1 billion in damage claims, said Webster. ▶

Outsourcing Messaging Not an Option for Big Companies

ASPs can't match price, technology

BY JENNIFER DiSABATINO
SNOWBIRD, UTAH

Big companies aren't likely to outsource their messaging systems anytime soon, because they have better technology at a more affordable price than any application service provider (ASP) can offer them.

That was the message from analysts and three large users at the Electronic Messaging Association conference here earlier this month.

With outsourcing, "your equipment's held hostage — very simple," said Al Petras, director of information technology at R. R. Donnelley & Sons Co. in Downers Grove, Ill. "Your equipment's got a blindfold around it and a rope around it, and there's a gun to your head."

The ASP model has been recently touted as a popular and affordable alternative for small and medium-size companies. But because many large corporations like R. R. Donnelley, The Boeing Co. in Seattle and Credit Suisse First Boston in New York are as big as, if not bigger than, the ASPs that offer outsourcing services, they have the finances and staffing to support messaging systems themselves.

"Nobody's been able to match the price that we're getting [for in-house maintenance and support]," said Dean Richardson, a senior systems analyst at Boeing. "We'd have to be doing either a really bad job or be really expensive doing it" to consider outsourcing.

Announcements last month by Circuit City Stores Inc. in Richmond, Va., and Columbus, Ga.-based insurance company AFLAC Inc. highlighted some of the attractive qualities of outsourcing for a specific and limited use. Outsourcing messaging, particularly Web-based e-mail, is quick and scalable.

But the corporate users here said they not only want to keep the management of their messaging systems in-house, but they are also moving toward standard messaging systems across departments and acquired companies, if they haven't already done so.

Clark Loffman, vice president and head of global messaging at Credit Suisse First Boston, said that when he worked in messaging for Zurich-based parent company Credit Suisse Group four years ago, its various units used 14 different messaging systems.

Now, there are only two, with Microsoft Corp.'s Exchange used as the primary system and Lotus Notes used for the private banking group. It's an effective arrangement for the banking group, Loffman said, because the customers — individuals with vast wealth — need specific applications built on top of the core messaging system.

Richardson said that when Boeing takes over a company, that company must move to the Boeing standard, and third-party software isn't allowed. ▶

Travelocity, Galileo Bid for Business Travel

BY MICHAEL MEEHAN

Two travel services Web sites are taking steps to get business customers to make their travel plans online.

Travelocity.com Inc. last week opened a business travel section on its market-leading leisure travel Web site. The move came the day after Rosemont, Ill.-based computer reservations firm Galileo International Inc. debuted Travel-Galileo.com, which will put brick-and-mortar travel agencies online to service business and leisure customers.

Both moves help to fill what has been perceived in the travel industry as a gap in online business-travel services. At the recent eTravelWorld Conference in Orlando, analysts said few companies use online booking tools, so the market for such services remains wide open.

Fort Worth, Texas-based Travelocity.com, the biggest player in that space, is the merged offering of Sabre Inc., also in Fort Worth, and Menlo Park, Calif.-based GetThere Inc. Its booking tools will allow smaller businesses to access preferred airline and group booking tools available to the larger customers of Sabre/GetThere.

Krista Pappas, director of travel analysis at Gomez Advisors Inc. in Lincoln, Mass., said the Travelocity.com initiative makes sense in that more-structured systems will have difficulty reaching travelers in smaller corporations.

Galileo's move takes advantage of its historical ties to brick-and-mortar travel agencies. The agencies will now be able to provide their traditional, over-the-counter service over Galileo's fiber-optic lines.

Pappas said one of the chief difficulties in providing business travel is the increased demand for customer service and the maintenance of long-term relationships — two areas in which brick-and-mortar agencies typically excel.

Framingham, Mass.-based International Data Corp. senior analyst Joshua Friedman released a report last month predicting that brick-and-mortar agencies will collectively dominate the market when they gain a greater amount of Internet savvy to mix with their travel expertise. ▶

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NEWS

Texas Attorney General Sues to Stop Living.com Data Sale

BY TODD R. WEISS

In a pre-emptive move aimed at ensuring that defunct online home furnishings retailer Living.com Inc. doesn't try to sell all its customer data as part of bankruptcy proceedings, the Texas Attorney General's Office last week filed both a lawsuit against the company and a proposed settlement that sets restrictions on such a sale.

Under the settlement agreement announced last week by Texas Attorney General John Cornyn, all of the personal financial data that Living.com collected — such as credit-card, bank account and Social Security numbers — would be destroyed under the supervision of the Austin, Texas-based company's court-appointed bankruptcy trustee.

The trustee could then sell or transfer the customer list, but only after notifying all of Living.com's customers of the proposed sale and giving them the chance to have their remaining information deleted from the list. The settlement still has to be approved by the judge overseeing the case in U.S. Bankruptcy Court in Austin.

Texas officials said the lawsuit and the settlement deal weren't filed in response to any proposal by the retailer, which shut
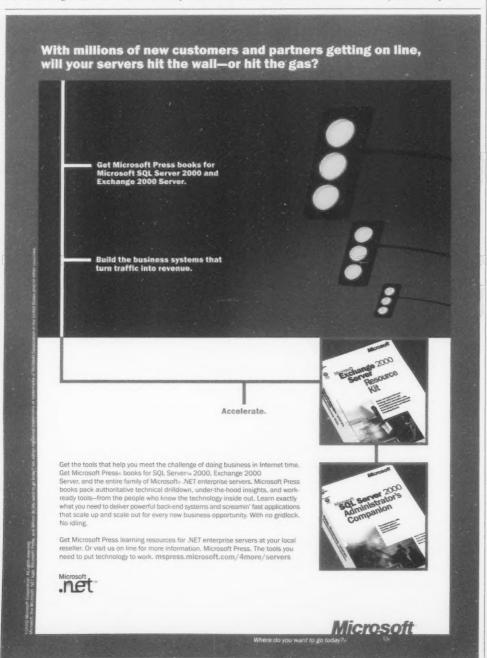
down and filed for bankruptcy protection in August.

But Hal Morris, an assistant attorney general in Texas, said Cornyn's office has followed the bankruptcy case closely since Living.com went out of business. Cornyn's office wanted to head off any possible sale that wouldn't conform to the company's privacy policy, which promised that customer data wouldn't be shared or sold without their consent, he said.

The attorney general contacted Living.com's lawyers right after the bankruptcy filing. "This is an important issue," Morris said, noting that Cornyn has also been involved in efforts to block the sale of customer data by defunct online toy store Toysmart.com Inc. in Waltham, Mass.

Living.com retained the right to share data "with trustworthy third parties," but its policy said customers could opt out of having their information shared. Company officials couldn't be reached for comment at press time.

Stephen Keating, executive director of the Privacy Foundation, a privacy organization in Denver, said such enforcement actions are good for online shoppers. In the Living.com case, Keating said, consumers "were put first [so] that their data won't be used without their permission." ▶

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Lineo in Pacts With Motorola, Samsung

Embedded Linux vendor Lineo Inc. announced two major deals last week – a $22.5 million investment from a subsidiary of Schaumburg, Ill.-based semiconductor company Motorola Inc. and a joint venture with South Korea-based Samsung Electronics Co. In the Motorola deal, Lineo will provide open-source technology and its embedded Linux applications for use on Motorola chips. Lindon, Utah-based Lineo will develop embedded Linux systems for use in Samsung's devices.

Novell Announces Alliance With Red Hat

Novell Inc. announced at Network/Interop last week that it plans to strengthen its relationship with Red Hat Inc. in Durham, N.C. Novell CEO Eric Schmidt said Red Hat has selected Novell Directory Services eDirectory and Novell's DirXML technology to provide the directory services infrastructure for Red Hat's worldwide network.

Microsoft Changes Reporting Categories

Microsoft Corp. last week retooled its revenue segments for the next fiscal year, increasing the lines of business from three to five. The company will split revenue into the following categories: desktop software; enterprise software and services; consumer software, services and devices; consumer commerce investments; and other.

Short Takes

Corning, N.Y.-based CORNING INC. has agreed to buy the fiber-optic division of Milan, Italy-based PIRELLI SPA for $3.9 billion and will purchase other assets for $100 million. . . . DELL COMPUTER CORP. began direct PC sales in India last month and plans to expand its manufacturing capacity in Xiamen, China, to four times the current level. . . . SUN MICROSYSTEMS INC. has launched a $50 million investment program targeted at early to midstage Internet start-ups in the Asia-Pacific region.

Intel Battles on Legal, Financial Fronts

Despite recent headlines, analysts say leading chip maker is still strong

BY KATHLEEN OHLSON

THE LAST FEW weeks have been eventful legally and financially for Intel Corp., whose stock continued to drag last week on Wall Street though analysts said they saw no long-term crisis.

The Federal Trade Commission (FTC) last week closed its investigation into Intel's business practices. Meanwhile, rival chip maker Broadcom Corp. in Irvine, Calif., asked for a preliminary injunction to cease Intel chip sales, alleging that Intel has used Broadcom technology to accelerate development of its own products.

Intel originally brought a suit against Broadcom in March, charging the company with accessing Intel's trade secrets through former Intel employees.

Last week's developments come on the heels of Intel's revised third-quarter sales projections.

Intel said sales would be 3% to 5% higher than the second-quarter figure of $8.3 billion. Wall Street expected an increase of 12% to 15% and punished Intel by dropping the company's stock price from $61.48 to $47.94 in next-day trading. The stock was still trading in the mid-$40s last week.

But analysts said they are still confident about Intel's future. "There's nothing wrong with Intel," said Jay Patel, an analyst at The Yankee Group in Boston. These issues won't be a distraction for Intel, "and they'll be behind them fairly soon," Patel said.

Analysts said the FTC's decision to close its case is positive for Intel. The Broadcom case "will eventually have an out-of-court settlement," predicted Tony Massimini, chief technology officer at Semico Research Corp. in Phoenix. "They'll agree on something out of court. It's not worth paying the lawyer fees."

Chuck Malloy, an Intel spokesman, said Broadcom's assertions of stolen trade secrets concerning several Intel products, including the Media Access Controller chip, lack merit, which will be proven in court. Bill Blanning, a Broadcom spokesman, said the stolen trade secrets were proven true during the discovery process. ▶

Ups and Downs for Intel

Sept. 21: Intel issues a revised third-quarter earnings projection, expecting 3% to 5% growth. Wall Street analysts expect 12% sales growth for the third quarter. Intel also said its **gross margin will be close to 62%,** a notch lower than the previously expected 63% or 64%.

Sept. 22: Wall Street greets the revised projection by dropping the stock price from **$61.48 to $47.94.** The price has since hovered in the mid-$40s.

Sept. 25: Chip rival **Broadcom Corp.** files a preliminary injunction against Intel, seeking to halt Intel's chip sales and alleging that Intel used Broadcom chips to accelerate development of its own products. The injunction is the latest legal shot between the companies since March.

Sept. 26: The **Federal Trade Commission** closes its three-year case against Intel involving its business practices.

Win2k Datacenter Depends On Unisys at the High End

BY MARK HALL
SAN FRANCISCO

If the Windows 2000 Datacenter Server operating system that Microsoft Corp. formally announced here last week is to leap into the highest reaches of corporate data centers, it will be Unisys Corp. — not Microsoft — that will be jumping many of the hurdles facing the new software.

Blue Bell, Pa.-based Unisys' ES7000 server is the only system currently available that's ready to take advantage of the 32-processor scalability built into Windows 2000 Datacenter.

But Unisys, which now generates about 70% of its revenue from services, could have trouble "getting the mind share of CIOs" after doing a poor job of selling machines beyond its installed base in recent years, said Jim Cassell, an analyst at Gartner Group Inc. in Stam-ford, Conn. Unisys will need vendors' help to get widespread attention from information technology executives for the ES7000, Cassell added.

For example, as part of Microsoft's Enterprise 2000 Launch event, Hewlett-Packard Co. and Unisys last week announced that HP will join Compaq and ICL, a Slough, England-based subsidiary of Tokyo-based Fujitsu Ltd., as ES7000 resellers.

Peter Samson, a Unisys vice president, acknowledged that the company has been focusing mainly on its installed base of computer users. But being the only 32-way game in town should be a boost for the company, Samson added, claiming that ES7000 orders have already increased 120% in the third quarter compared with the first half of this year.

One new ES7000 user is WorldTravel Partners, a $3.5 billion corporate travel service in Atlanta. The company has built an internal data warehouse on one of the Unisys machines running Windows 2000 Advanced Server and Microsoft's SQL Server 7 database. Lloyd Marino, WorldTravel's vice president of IT, said he's ready to upgrade to the Windows 2000 Datacenter operating system and a new companion SQL Server 2000.

Marino said he's pleased with the Unisys server's performance and especially with its reliability and scalability. "You can literally put a bullet through it, and it still runs," he said. The ES7000 is equipped with only 12 processors now, but Marino said he's looking at consolidating other applications on the machine — a move that would expand the number of processors. "It's not even sneezing at the load we're putting on it now," he noted.

Joe Mohen, CEO of Election.com Inc. in Garden City, N.Y., said he plans to use a Compaq-branded ES7000 loaded with 32 processors and 32GB of memory to handle the peak loads of the online elections that his company conducts. For a national election, Mohen said, that could mean processing up to 6,000 votes per second with full encryption and voter authentication capabilities.

Microsoft has a lot riding on the Unisys machine, said Cassell. "If Microsoft's going to be successful [at the enterprise level], they need a mainframe, and this is it," he said. ▶

AT A GLANCE

Server Options

Hardware choices for Microsoft's high-end operating system

32-WAY SERVERS

Compaq
■ ProLiant ML770

Hewlett-Packard
■ NetServer LXr 8500 DC

ICL (Fujitsu)
■ Unannounced

Unisys
■ ES7000

8-WAY SERVERS

Compaq
■ ProLiant 8500

Dell
■ PowerEdge 8450

Hewlett-Packard
■ NetServer LXr 8500

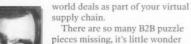**IBM**
■ Netfinity 8500

MARK HALL

Long live B2B!

MY PESSIMISTIC MOTHER is quick to remind me that her philosophy began before President Woodrow Wilson was fruitlessly flogging the League of Nations. Some say it was the Senate's blocking of U.S. entry that caused Wilson's stroke. If he had been a

pessimist, Mom reasons, he would never have been so disappointed, with such dire consequences.

Like my venerable mother, many IT executives think pessimism is the key to long life. Recent news trends certainly seem to support their innate doubts about business-to-business projects. The latest in many a dour story about B2B exchanges appeared first last week on *Computerworld.com*. Carol Sliwa reported that retail exchanges, once flush with optimism about becoming the efficient clearinghouses for billions in pass-through dollars, have deflated.

Not since, well, B2C have IT managers suddenly questioned the very notion of a big-ticket IT-led project. It isn't just that a B2B program with substance and purpose is difficult — most IT work is complex. Rather, B2B has gaping holes in it, pessimists proclaim.

For example, some exchanges can construct limited, company-specific auctions. But you can forget about ad hoc purchases for the billions worth of specialty gear that most companies need. Oh, you want to include the full breadth of international suppliers today? Dream on. And don't even think about adding your partners who finance or insure your real-

MARK HALL is *Computerworld's* West Coast editor. You can contact him at **mark_hall@computerworld.com**.

world deals as part of your virtual supply chain.

There are so many B2B puzzle pieces missing, it's little wonder pessimism is elbowing out the upside thinking on B2B.

With all due respect to dyed-in-the-wool pessimists like my dear mom, you'd be foolhardy indeed to wait on the sidelines as the B2B phenomenon takes off. And it will fly. Long and far, too. That's because it's too logical not to succeed.

Beyond simple logic, there is compelling evidence. In *MetaCapitalism*, a new book by Grady Means and David M. Schneider, the two managing partners at PricewaterhouseCoopers detail both why and how B2B will increase the value of capital markets from $20 trillion today to 10 times that in eight to 10 years.

With B2B, the authors argue, companies can redefine their business processes so that noncore products or services get outsourced. This frees corporate capital to augment and expand essential revenue opportunities. Any IT team that drags its feet on B2B will go down in flames, they warn.

Perhaps the pessimists should worry after all. Now I have to break the news to Mom. ▶

"OUR CHIEF SECURITY OFFICER MUST BE GOOD. NOBODY HAS SEEN HIM IN WEEKS."

DAN GILLMOR

Peer-to-peer computing: The next IT tsunami?

PEER-TO-PEER computing, which is all the rage lately among some IT cognoscenti and much of the media, is being compared to the ill-fated "push" craze a few years ago. Don't make that mistake. Push was an interesting idea that never lived up to its hype. Peer-to-peer (P2P) is going to change things in a big way.

Don't make the mistake, either, of thinking of P2P only in the Napster context. Yes, file sharing is an enormously valuable component of the P2P genre — though the entertainment industry's paranoid reaction could damage the most promising computing architecture in years. But file sharing isn't the only promising use.

The basic notion of P2P is that two computing devices (peers) share their information and brains with each other. With Napster and many other peer-to-peer technologies, the desktop machine contains a server, not just a client. It may be a mini-server designed to send out limited kinds of data, but it's a server nonetheless.

DAN GILLMOR is technology columnist at the *San Jose Mercury News*. Contact him at **dgillmor@sjmercury.com**.

Servers can be peers. The domain name system, which lets computers find one another on the Internet, is a group of servers peering effectively with one another. Devices can be peers, and as we connect a billion devices to the Internet, we'll have no choice but to use P2P.

But P2P has also been defined to include some fascinating projects in distributed computing, where we use some of the power that typically sits idle on PCs around the world by breaking up big-number-crunching problems into small pieces. Many volunteer, nonprofit projects are in the works, but several for-profit companies have sprung up to take advantage of this notion, too.

Another P2P use that has gotten lost in the Napster noise is what we might call the "read-and-write Web." The Web has been turned principally into a read-only medium, but it wasn't designed that way. New products allow people to write online from inside Web browsers, saving their work directly on the Web.

The real excitement, though, is in what's yet to come. At a recent meeting of P2P leaders in San Francisco, a representative from Intel, which is moving into P2P in a big way, offered some intriguing suggestions. For example, he said, peering computers might watch one another's backs

from a security standpoint. Or a company might be able to distribute multimedia training materials more efficiently and cheaply if it didn't have to set up powerful servers all over the world. The possibilities are literally endless.

IT people will be forgiven if they groan at this point. Client/server and network computing are hard enough. Now comes a whole new architecture. But the potential savings and utility are enormous. P2P is for real. We will dismiss it at our peril. ▶

JOHN GANTZ

The things that make e-business managers tick

A FEW MONTHS ago, I wrote about the personalities of successful e-business managers. They're like those of most IT professionals: aggressive, willing to take risks and optimistic.

Now that you've all been to your shrinks or commenced a regimen of mood-altering drugs and are ready to be e-business execs, let me tell you a little about your new persona. This analysis is based on information I released at International Data Corp.'s Internet Executive Forum 2000 from surveys of U.S. e-commerce managers conducted last month.

To begin with, more of you are women (about 45%) now that you're in the ranks of business managers and not IT professionals. You're also young (average age: 42), but not *too* young. Most of you work in brick-and-mortar companies, after all. Even those of you in dot-coms that sell *only* over the Internet are older than 35 on average, although

almost a quarter are younger than 30. And you're educated — about two in five have advanced degrees.

What kind of television shows do you watch? Wow, what a serious bunch! Seventy percent primarily watch news, while only 25% watch sitcoms. One-third watch sports (the men?), but almost half watch documentaries. For outdoor activities, your interests are all over the map, from auto racing to tai chi, but as many of you bike as play golf (28%), and one quarter of you jog or run. Only one in 25 does nothing.

JOHN GANTZ is a senior vice president at International Data Corp. in Framingham, Mass. Contact him at jgantz@idc.com.

But what most surprises me is what motivated you to take your new e-business positions.

It ain't money. Only 60% of you got raises when you got your jobs, and 25% actually took pay cuts (although those who did get raises averaged increases of more than 30%). And only those of you

who moved into pure-play dot-coms — about 10% to 15% of all e-business positions — got any equity worth speaking of.

But get this: Your No. 1 motivation — out of a list of six reasons — for taking the position was intellectual stimulation. Salary and bonus placed fourth, right after the chance to be a pioneer and a part of the Internet revolution. The opportunity to own a piece of the company was dead last, even among those who got it.

There's good news for your employers: Only 6% of you expect to change jobs more than once every two years — although you average five offers or recruitment calls a year. The bad news may be this: 80% of you have no experience in the online world.

You do, however, have expectations of financial reward; you're looking for income growth of more than 45% in the next two years. And while only 18% of you have a net worth of more than $1 million, twice as many expect to be in that camp in two years. (Did I mention that Internet executives are optimistic?)

For companies wishing to hire or hang on to you, there are some clear messages in all these statistics. As the e-business job market swells, more of you will come from nontechnical or Internet-related backgrounds, and you'll be as motivated by the challenge of making something happen in the online world as by cash. You entered your new assignment to be part of the revolution. But you'll be new to the assignment and will need some room to operate. In fact, our panelists liberally used the word *freedom* to describe why they have the jobs they have.

Go get 'em, tiger! ▶

READERS' LETTERS

Lack of knowledge hinders programming hires

W HILE IT is in my best interests as a programmer to restrict the supply of talent, I simply cannot agree with the commonly cited statistics about the huge number of rejected applicants for programming jobs.

If you have ever tried to hire programmers, you will have observed that the majority of people brought in for interviews do not have the

talent to handle the job. I'm not talking about a lack of currently hot skills such as Java or C++. I mean allegedly experienced people, sometimes with master's degrees, who cannot answer simple questions from undergraduate computer science courses.

The claim that companies should train new hires in the required skills is also absurd. In the current job market, that employee will be gone in a year and a half, just at the point when he or she is up to speed on the new technology. A programmer could gain a superficial knowledge of C++ in "a matter of weeks," as Norm Matloff suggests ["Should the H-1B Cap Be Raised?" Special Report, Aug. 28], but true proficiency takes much longer than that.

Steven E. Barnes
Milpitas, Calif.
sbarnes@syndeocorp.com

Egging developers on

W HILE I enjoyed the *Computerworld* article on "Easter Eggs" [Technology QuickStudy, Sept. 18], it ended on a negative note, mentioning what we all pay in code bloat, memory consumption and time-to-market.

As a LAN administrator who decides which software to purchase, I do consider memory footprint and code size. But as a closet geek, I am thrilled to see some creative originality by overworked developers in the software shops who have pride enough in their work to sign it.

Jeff Absher
Chicago

Dark days of IT not quite upon us yet

A S ONE of the technologists on whom the sky will shortly fall, I differ with the opinions of the "futurists" in the Sept. 25 article "Darker Days Ahead" for IT [Business]. Ten years ago, we heard how CASE tools were going to make programmers obsolete. And it was one of your other columnists, Ed Yourdon, who wrote *The Rise and Fall of the American Programmer*, only to follow it with *The Rise and Resurrection of the American Programmer*.

While I do not advocate sitting on one's technical laurels, there are a host of reasons why I do not think these predictions will come to pass. Not all companies are willing to ship their trade secrets overseas for a fleet of programmers to

rifle through. And while the labor pool of programmers likely will grow, the very skills that the article notes will be in demand — i.e., soft, nontechnical skills — are the ones recent college graduates have the least of.

Matthew E. Ferris
Wheaton, Ill.

Cultures can choose, but not all choices pay

M ARK BERRETT, in the Sept. 18 issue, expresses concern over the potential for "cultural pollution" [Readers' Letters].

I agree. Any culture should be free to choose whether to accept the advances of IT. But any culture that chooses to forgo those advances in the name of "cultural purity" shouldn't expect to share in the wealth generated by these advances. You can't have it both ways.

Ralph Mace
Newport, R.I.

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COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

To focus on work, escape corporate life

A FTER spending years at a Fortune 200 organization with responsibilities for several large product launches and campaigns, my advice to e-business project managers is to get the heck out of the corporate office ["Success in E-Projects," Business Opinion, Aug. 21]. Take one or two visionary senior executives and your techies who have creativity and openness to an off-site location to get focused for hard work. You have to hide out and build consensus with the right people if you want to get anything done.

Tony Torti
HealthNetStaffing
Toledo, Ohio

NEWSOPINION

BARBARA MYLES

Message to ASPs: Regulate, or be regulated

WHEN APPLICATION SERVICE provider (ASP) Pandesic announced in July that it would shut down, it sent a shock wave through its customer base. Its decision left more than 100 Pandesic customers needing to find new ASPs, negotiate new service-level agreements (SLA) with them and pay vendors to move their data to the new ASPs, causing these customers a lot of pain and lower profits.

Companies beset by the IT skills shortage and the increasing complexity of administering software applications have turned to the relatively new world of ASPs and negotiated SLAs with them. The ASP Industry Consortium's "Application Service Provider Buyers Guide" recommends that SLAs include provisions for data and system security, customer support, system performance measured in response time, system availability and enforcement provisions. It's each company's responsibility to check out the ASP it wants to do business with and negotiate the best SLA for itself. The ASP's service must be dependable enough so that its customers don't experience any drop in performance.

BARBARA MYLES, a former supervisor of systems at the Boston Public Library, is an MBA student at the University of Massachusetts, Boston. Contact her at brmyles@aol.com.

Pandesic's owners, Intel and SAP, decided to shut it down because profits were low. But what does this say about the value of SLAs? If ASPs have major problems, the SLAs aren't worth much. Each of Pandesic's customers had an SLA with Pandesic, but the SLA can't force Pandesic to stay in business or pay the costs of transferring customer data to other ASPs.

As more companies sign on with ASPs, there will be increasing demands for more stringent SLAs and government regulation. Companies need a safety net when ASPs fail. What's needed is an industry-based oversight body that will force the ASPs to meet certain functionality and quality requirements.

ASPs have been compared to banks because a company's data is very valuable, and the company trusts the ASP to keep its data safe and provide experts who have experience supporting and managing the applications. But there's no standard for what an ASP must provide to its customers. The service parameters are decided by the IT, marketing and legal departments of both companies involved in working out an agreement.

ASPs should learn from the experience of the direct marketers. Self-regulation concerning privacy of customer data didn't work. Now, Congress is considering laws to protect the privacy of individuals while they're on the Internet, and violators could suffer criminal penalties.

It's not enough for a software vendor to approve of several ASPs to host its applications, because the vendor doesn't assume any liability if these ASPs fail. If the ASPs don't form a regulating group that can step in during crises to protect business data, it's only a matter of time before the federal government becomes involved.

A representative group of vendors whose software is commonly hosted by ASPs should begin working with successful ASPs and their customers to determine the essential qualifications, ethical responsibilities and requirements of ASPs and how to certify or license them. The group should also draw up penalties such as disbarring and fining ASPs that don't meet these standards. The primary benefit to ASPs that meet these requirements is that companies will be more willing to do business with them. ▸

BILL LABERIS

Three firms make good cases for CRM tools

INTERNATIONAL DATA CORP. says U.S. businesses will spend nearly $12 billion on customer relationship management tools (CRM) by 2002. Big business is throwing immense technological resources at getting close to the customer the way a hermit crab gets close to a snail shell.

It's not only big business getting into the CRM act. I recently visited Agillion, an Austin, Texas-based firm that's aggressively marketing a highly touted CRM product for smaller businesses. Team Lynch, a small Cincinnati realty company, has claimed that customer referrals, a key measure of customer satisfaction, jumped 70% after deploying it.

BILL LABERIS is a consultant in Holliston, Mass., and former editor in chief at *Computerworld.* Contact him at bill@laberis.com.

Almost every company has gone full bore into customer care. But even as I write this, tens of millions of dollars worth of CRM products are going for naught because so many companies fail to grasp a fundamental truth: CRM is not about technology; it's a state of mind. There are excellent CRM tools available to attack long-standing customer issues. What is lacking is an empowerment of people up and down the enterprise to point out the obvious places where these tools could be deployed.

Consider the following examples of customer relations in action:

A long-distance phone company approached a business user with a discount rate offer better than the rate his business already had from another provider. The customer called his provider to inquire about the upstart. The customer service representative warned the customer that upstarts are free to change rates at will, usually upward, to eventually earn a profit, while selling initially at a loss. The customer then inquired about his own long-distance rate and was quoted one 50% higher than what he thought he was paying. "We had a rate increase in July," he was told. Said the obviously embarrassed customer service representative, "In your state, we are not compelled to tell you of rate increases." A CRM tool could have easily informed the customer of the rate increase, thereby helping the company keep the customer — who has since changed carriers.

In another case, a business customer held significant funds in a money-market account of a bank that was acquired earlier this year by another bank. The customer had routinely made phone transfers to his checking account from the money market account. But when he tried to do so after the takeover, he was told the following: His money market account had been switched — unbeknownst to him — to a money-market fund with the acquiring bank; the bank needed more "proof" that the person calling in the transfer was who he said he was, despite his answering all the password questions correctly; and if the customer wanted to get at his money, he would first need to get his lawyer to write to the bank proving that the customer was who he claimed he was! A CRM tool could have placed this customer automatically in a group that, at the very least, could have triggered a phone call from the bank, informing the customer of the pending changes.

Then there's the frequent-flying businessman who arrived breathless at the gate 10 minutes before departure. The gate was still open, and the ground staff hadn't yet begun boarding standbys. Ample seats were available, but the frequent flier, holding a paid first-class ticket, was told that the standby fliers "had been waiting a long time, and you are late." He couldn't board and missed his connection home. The simplest of CRM database applications could have tagged the flier with a status that would have marked him as a valued customer and sent him speedily to his next connection. Now he has a new first-choice airline.

These stories are true, since I was the customer in each case.

CRM is a state of mind, something that escapes many companies. For CRM to work, it has to focus singularly on one thing: the customer's pain. Deploy customer management tools at *your own* convenience, and that's just what you'll cause, not allay. ▸

Microsoft unfairly blamed for Web bugs problem

HAVING READ the article "Privacy Group: Web Bugs Can Track Microsoft Documents" [*Computerworld.com*, Aug. 31], I have to complain that the manner in which this information is presented clearly attempts to place blame on Microsoft for this situation. That is completely unfair. Even though you eventually quote a Microsoft response, and an agreement from the original source, that this is not a Microsoft issue, you only do so after you have presented the entire story as a Microsoft problem. Microsoft has done more to make computing useful, and to enable world-changing capabilities, than any other company or group of people in this industry, and although they certainly have created some of their own problems, they don't deserve this kind of treatment.

Kerry B. Beach
Practice manager
Solutech
Indianapolis

IT association to be recognized as 'Champion'

I'D LIKE TO inform *Computerworld* readers and all members of the Association of Information Technology Professionals (AITP) that the association was selected for a Champion of Industry award as a leading IT professional association. This honor was awarded by Pat Summerall's *Champions of Industry* television series. This prestigious corporate recognition series highlights companies and organizations that are stars of their industries through product or service innovations. AITP National President Donny Wall will be featured on Fox News Cable Channel on Oct. 19 between 1:30 and 2 p.m. EDT in a segment narrated by Summerall.

Linda Clark
AITP
Park Ridge, Ill.

'Secret' ad best kept hidden

AS A longtime reader, I am disappointed in your decision to allow the advertisement for Data Return/Victoria's Secret in your Sept. 4 and Sept. 18 editions. It makes me question your position with regard to women in technology. I wonder if male readers would be offended seeing a man in a G-string selling a router.

Christine Wagner
State College, Pa.

I ENJOY reading *Computerworld* tremendously. What I do not enjoy is being surprised and shocked by the Victoria's Secret/Data Return advertisement. Who decided this ad was appropriate? Does sex even sell "managed hosting solutions"?

Paul Hardy
Programmer/analyst
Goshen, Ind.

White
Paper

content
technologies

MIMEsweeper

IDC
INTERNATIONAL DATA CORPORATION

COMPUTERWORLD

Executive Insights on Content Security:

Proactively Addressing Potential
Liabilities in the New Economy

Executive Insights on Content Security:

Proactively Addressing Potential Liabilities in the New Economy

D uring the first half of this year, a number of high profile incidents were featured in the media which detailed malicious intruders sabotaging Web sites. Widely recognized names such as eBay, Amazon.com and E*Trade experienced significant downtime costing millions of dollars in lost revenue. Because of these incidents, security has become a major concern for every top-level executive whose business is increasingly dependent on e-commerce.

By Richard Dean, Program Manger, and Allan Carey, SeniorAnalyst, IDC

However, information security is not limited to e-commerce. It is also relevant to all Internet activities including e-mail and Web browsing. As more businesses provide Internet access to employees, content security and the potential liabilities surrounding unrestricted access are being discussed in executive boardrooms.

Issues Business Executives Face

Emerging technologies and the Internet are designed to allow businesses to be more productive and efficient. E-mail is the most widely used means of business communication, both internally and externally, because it is very intelligible and only requires a computer with a simple mail program and an Internet connection. The Internet has proven to be an evolutionary tool to gather competitive market information, prospect for sales leads, attract new customers, build stronger relationships with existing customers and suppliers and develop new distribution channels. These technologies also expose companies to an entirely new realm of liabilities and vulnerabilities.

In a recent study conducted by the American Management Association (AMA), 64% of employees, on average, have access to e-mail. E-mail penetration has saturated the enterprise market while opportunity for growth still exists in the small to medium sized business markets. With e-mail access literally at their fingertips, employees can correspond with friends and family aside from conducting their regular business activities. Of course, employees can also receive e-mail from any source through the Internet.

When an unsuspecting employee opens new e-mail, it can be like opening Pandora's box. For some hackers, e-mail is their transport vehicle of choice to hide worms, viruses and malicious mobile code (MMC). There have been numerous highly publicized cases including the "I Love You" bug, its mutant strain "Love Letter", and the infamous "Melissa" virus. By using a Trojan horse technique, hackers can gain access to the vital corporate infrastructure allowing vicious programs to wipe out hard drives, attach themselves to stored e-mail addresses and forward themselves to other unsuspecting recipients, and cause mission-critical data to be lost. The ramifications can be devastating. Estimates suggest that viruses alone have caused worldwide damage reaching $11 billion due to lost employee productivity, downtime and data loss.

According to the AMA report, 48% of employees have access to the Internet. Apart from conducting business activities on the Internet, employees have the freedom to browse their favorite Web sites, shop online and conduct personal financial transactions. These are the types of activities that can cause valuable and costly bandwidth to be consumed.

Other temptations of the Internet include pornographic sites, racially discriminatory sites and other pitfalls that can expose businesses to a multitude of legal liabilities. Underscored by the recent dismissal of dozens of Dow Chemical employees, companies are taking a no-tolerance posture involving the sending or storing of pornographic or violent e-mail materials within the workplace. Since July, Dow Chemical is reported to have terminated or disciplined nearly 300 employees for violating company policy regarding obscene e-mails. Prompted by an employee complaint, Dow narrowed its investigation by filtering keywords to locate potentially offensive materials, which were then further reviewed for violations.

Together, e-mail and the Internet can equal lost productivity, which in turn can quickly bring about a reduction in profitability (See chart). The $9,600 figure from the chart may not seem significant, but when multiplied by 1,000 employees, the result is $9.6 million lost in productivity. The total excludes all costs associated with providing Internet access.

Another issue employers must face is employer's rights

Potential Losses Resulting from Declines in Employee Productivity

FACTORS	RESULT
Number of hours per day each employee spends on personal business	1
Number of work days per year	240
Average hourly rate including overhead expenses	$40
Annual cost of lost productivity per employee	$9,600

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS. 2000

vs. the employee's right to privacy. It has become a very fine line for the employer to walk. Due to global resource constraints, employees are spending an increasing number of hours at work, often leaving little time to accomplish duties required in their personal lives. Consequently, employees end up using company time and equipment, primarily e-mail, the Internet and a PC, to fulfill these personal duties. Does management consider this to be an acceptable or a fair trade-off between employees working more hours and employees using company assets for personal use? For many companies today, the privacy issue produces a pendulum effect swinging between an acceptable level of personal activity in the workplace to one side and a flagrant abuse of company assets to the other side.

This workplace dilemma also leads to the question of whether or not employers have the right to monitor employees' activities utilizing content security initiatives when these employees are using company assets. Do employees have the right to expect a certain level of privacy while on the job? There are valid arguments from both sides of this quandary. Employers believe they not only have the legal right, but the obligation, to monitor all activities within the confines of the physical surroundings as well as with company-owned assets. Today, the clash of both standpoints is being fiercely debated in many executive boardrooms, with employee rights groups and within certain legal circles.

In addition to privacy rights, businesses are confronted with the illicit siphoning of trade secrets. Proprietary infor-

mation remains a significant security concern for many CEOs. In 1998, for example, the Department of Commerce (DOC) reported that U.S. businesses incurred $12.5 billion in intellectual property losses.

Statistics indicate company insiders are often responsible for the majority of damage. These insiders can be current or former employees with motives such as revenge, self-promotion, notoriety or financial gain. If employees continue to have unlimited access to information without a comprehensive content security initiative in place, millions of dollars worth of intellectual capital could be trickling out of the business undetected.

It is critical, therefore, for business decision-makers to consider the drawbacks of monitoring employees' activities when evaluating whether or not to develop a content security initiative. The process is often time-consuming and labor-intensive. Dedicated human resources are needed to review all e-mails flagged for suspicious activity and to subsequently determine appropriate actions. Internet usage records require a similar review and evaluation process. This can be a costly endeavor to ensure a secure and productive ebusiness environment. The question becomes, which is the lesser of two evils? Investing to keep the environment secure? Or investing to replace what is lost or stolen from the environment?

Content Security

In order to ensure a secure and productive ebusiness environment, while protecting employee privacy, business decision-makers can implement a comprehensive content security policy imbedded in the early stages of business policy formulation. Content security picks up where anti-virus leaves off. It involves an Internet management tool utilized to control and manage e-mail scanning and monitoring, Web content and downloadable applications execution. The tool also offers customization functionality based on corporate policies. The content can be both active and passive. Examples of active

Ripped Off
Theft of intellectual property most frequently occurs through the following groups:
- Insiders
- Intruders
- Hacktivists
- Criminals
- Industrial espionage
- Government-sponsored activity

SOURCE: DEPARTMENT OF COMMERCE

content include viruses, Trojan horses, ActiveX, executables (.exe) and malicious mobile code. Passive content includes e-mail and excessive use of bandwidth. In addition to archiving, encryption and image scanning, the functions of content security are:

- **E-mail scanning and monitoring** – Checks all e-mail — inbound and outbound — for confidential data, excessive file size and proprietary material. Messages are scanned using keywords and phrases.
- **Web content** – Checks all Web activity by identifying and managing Web content containing racist or hate material, banned files, pornography, profanity and potentially lost or corrupted material.
- **Downloadable applications execution** – Checks all content for viruses, Java scripts, ActiveX and .exe. These can be attached to e-mails or hidden behind downloadable material from the Web.

A comprehensive content security initiative involves participation from the employer and the employees to ensure adoption and success of the program. The main components of a comprehensive program include the following elements:

- **Establish a content security policy** – A company policy that defines electronic usage for employees and warns them about acceptable business practices when using company assets and the repercussions for violating the policy. This policy covers all e-mail correspondence, Internet usage and appropriately sets employees' expectations of privacy. Employees are warned that monitoring takes place and each employee signs a consent form. A successful policy requires involving employees early in the process, gaining their buy-in and being flexible with expectations.
- **Education and training** – By educating employees and raising awareness of security issues, employees better understand the benefits of a content security program.
- **Content security solutions** – These solutions enable businesses to identify and manage content access over the Internet.

Allan Carey is senior analyst and Richard Dean is program manager for Framingham, Mass.-based International Data Corp.'s Information Security Services research program. For more information on Content Security, see IDC's white paper, Content Security: Policy-Based Information Protection and Data Integrity.

Many vendors offer these solutions, including Content Technologies, Tumbleweed and Trend Micro.

■ **Maintenance and review** – As businesses change, company policies are updated to ensure business and network integrity in the ebusiness environment. Content security solutions are modified to address new threats and hazards.

Implementation of a comprehensive content security program will help ensure a secure ebusiness in an "always on" global economy. By taking the three e's — establish, educate and enforce — approach to content security, businesses gain a high degree of confidence, while fostering a harmonious and trusting work environment.

Risks of Disregarding Content Security

A plethora of issues can arise if a security program is not implemented. It can expose the company to an overwhelming number of legal and financial problems. Below are a few issues executives need to consider:
■ Class and individual action suits
■ Loss of network integrity and availability
■ Loss of intellectual capital
■ Loss of employee productivity
■ Defamation of brand name and reputation

Class and individual legal action in the form of sexual harassment and hostile work environment, invasion of privacy and wrongful termination are examples of the most common legal liabilities. An illustrative case was Bouke vs. Nissan Motor Co. (1991). Two employees were terminated for having e-mail containing inappropriate language and jokes. The employees sued for invasion of privacy because the e-mails were obtained through monitoring. The judge ruled in favor of the defendant because Nissan required employees to sign a consent form explaining the company usage policy. The employees were aware that the company hardware and software were only intended for business use and that the company was monitoring information transfers.

Another example was New York State Correction Officers and Police Benevolent Association vs. State of New York Department of Corrections (2000). In this case, union members are suing the State of New York for exposing confidential information about the correction officers to inmates. The confidential information consisted of social security numbers, addresses and other personal information. The union is suing for an unspecified amount in damages. This is a provocative example of potential liability due to unsecured data.

When viruses, executables or malicious mobile code compromise network integrity and availability, mission-critical data can be lost or stolen without detection. One malicious attack can wreak havoc causing millions of dollars in lost revenue, not to mention the potential loss of intellectual capital. Reports estimate 97% of all ebusiness crimes go undetected or unreported. If a criminal breaks into a home, a homeowner would report the intrusion to the proper law enforcement authorities. Why wouldn't the same thought process apply to the business?

Businesses often refrain from divulging their vulnerabilities in order to prevent unwanted notoriety and additional attacks and businesses can't afford to blemish their reputation and brand name. It takes seven times more effort and money to attract new customers than it does to hold on to existing ones. In the ebusiness world, trust and loyalty are critical attributes to protect.

Breaches of security can become the catalyst for severe economic upheaval. Therefore, content security should be integral to the strategic business plan to safeguard against the potential legal and financial liabilities inherent with business activities conducted over e-mail and the Internet.

Adding to the argument, the return on investment (ROI) attributed to proactively implementing a content security plan is quantifiable from both an economic and human resource perspective. Essentially, businesses reap the monetary benefits of establishing a comprehensive program through increased employee productivity, improved network integrity and availability, stronger relations with partners and suppliers, and increased profit potential. In addition, businesses cultivate knowledgeable employees who are aware of and can guard against the trappings of the Internet.

Finally, senior executives also earn the respect, trust and loyalty of the workforce by establishing an environment of open communications. In such an environment, both employee and employer understand expectations and can work toward reducing potential liabilities and promoting the goals and objectives of the organization.

CASE STUDY: ZENITH ELECTRONICS CORP.

Content Technologies' MIMEsweeper Keeps E-mail Clean at Zenith

The hottest growth area in the field of Internet security is content security, with expected compound annual growth of 71% from 1999 to 2004, according to Framingham, Mass.-based research firm International Data Corporation (IDC). Content security revenues were only $66 million in 1999. In 2004, IDC expects that number to reach almost a billion.

The Critical Need

The reason for this fast growth: content security addresses a critical need in virtually every company connected to the Internet — a need that only recently was widely recognized. Viruses, pornography, oversized files or banned file types, spam and malicious Java code are innocently downloaded from a Web site — there are lots of dangers lurking out there in cyberspace — dangers that can bring down networks, spur harassment lawsuits, and degrade productivity of both people and systems.

Employees can unknowingly or deliberately send trade secrets to a competitor with the click of a mouse. Content security products protect companies from these dangers by scanning content and stopping suspect e-mail or Web downloads before they do damage.

Of course, some companies have been wise for

> **Just think of the people who got hit hard with the Melissa virus, or any of the new ones that came out. We don't have to worry because MIMEsweeper catches new viruses even if we haven't updated the virus definitions.**
>
> -Jeff Ferrera, e-mail administrator,
> Zenith Electronics Corp.

years to the content dangers posed by the Internet. Zenith Electronics Corporation is a case in point. A developer and user of technology since its founding in 1918, the Glenview, Ill.-based company had 1999 sales of $834 million. Over four years ago, Zenith was one of the first companies to install Content Technologies' MIMEsweeper when it was first introduced.

MIMEsweeper scans all e-mails coming into or out of the organization through a dedicated Microsoft Windows NT box. Once through the gateway, e-mail is sent to the local network in Glenview or over leased lines to other locations. Any e-mail that violates policies set by Zenith is automatically blocked. Depending on the violation, the e-mail may be discarded, bounced back to the sender or held for further analysis by the IT staff.

"I can't remember the last time we had a virus in here. MIMEsweeper looks for things like Java script HTML viruses, Visual Basic stuff, .exe files — all the things that can attach to an e-mail. Usually, it can clean the e-mail for me — it will actually go in and blow up the attachment long enough to clean the virus, wrap the attachment back into the message, and send it on its way," says Jeff Ferrera, Zenith's e-mail administrator.

The Greatest Benefit

MIMEsweeper's greatest benefit is peace of mind.

"Just think of all the people who got hit hard with the Melissa virus," says Ferrera. "Or any of the new ones that have come out. We didn't have to worry because MIMEsweeper catches new viruses even if we haven't updated the virus definitions, which I probably don't do as often as I should. Every now and then I'll walk in the office in the morning and someone will say 'Oh, did you hear about such and such new virus that's going around?' and I'm thinking in my head that there is probably a new virus definition I should have downloaded. Then I will go to the [Windows NT] box and find that MIMEsweeper is already catching the infected messages," he says.

Virus Updates

Not that updating the virus definitions is all that difficult, Ferrera says. Rather than reinvent the wheel, MIMEsweeper works with the anti-virus detection product an IT organization may have already installed, invoking that product to detect and cleanse a specific virus when it thinks one is present. Zenith, for example, uses the Command Software (Jupiter, Florida) Virus Scanner for MIMEsweeper. "To update the virus definitions all I need to do is download them from the Command Software Web site," Ferrera says.

But Zenith doesn't take any chances when it comes to attachments. "If an e-mail comes in here with an attachment containing, say, a Visual Basic script that it doesn't recognize, MIMEsweeper has instructions to hold the message until I've looked at it," Ferrera says. "Typically what I'll do is check out the message to see if it looks okay before releasing it to the intended receiver."

Greater Control over E-mail

Ferrera also likes MIMEsweeper because of the control it gives Zenith over its e-mail traffic in general. For example, it can detect who's sending or receiving

the most mail — which allows better resource deployment and load balancing. MIMEsweeper also helps Zenith to accurately and quickly diagnose user e-mail problems.

"We also use MIMEsweeper for scanning outgoing mail," states Ferrera. "I can think of one case in particular where we had an employee leave us who began soliciting his ex-Zenith colleagues to join him at his new place of employment. So we blocked all incoming mail from that sender.

Given the need, the system can also be used to scan all e-mail content for a particular phrase to protect against loss of trade secrets, or to block people from sending or receiving e-mail to or from specific addresses."

More Than a Sense of Security

MIMEsweeper can also help users with issues other than security related topics.

"Actually, someone came to me today — they were sure their e-mail had been lost. I was able to check the log files and see that, yes, the e-mail had come in but it had been mis-addressed," he says.

MIMEsweeper had not only held the mail, it had sent a message to the sender notifying them of the error.

"I would consider MIMEsweeper to be a 'must-have' for any organization," Ferrera says, "if only to protect yourself. I think the product is invaluable."

BUSINESS

THE HUMAN FACTOR

Technology isn't the only critical factor in e-business initiatives. In fact, many companies struggle more with employees than with systems when launching online ventures. Getting people in line with a new vision is the biggest challenge — and the most important, experts say. ▶ **42**

MAKING THE GRADE

What makes an internship good or bad? Just ask the student reviewers at InternReview.com. The site, launched by a group of Carnegie Mellon students, lets interns rate their experiences so others can know what to expect before accepting an internship. ▶ **42**

TAKING CHARGE

Kmart is on its fourth CIO in the past five years, but as the retailer finally commits to a long overdue restructuring of its information technology systems, analysts predict the company's new IT leader will take on more responsibilities and will stick around longer than her predecessors. ▶ **44**

LINKING TO THE THIRD WORLD

The nonprofit Global View Network is spearheading an effort to fund and build an electronic procurement system that developing countries could use to connect to the rest of the world. ▶ **46**

ONLINE ELITE

Online exchanges are a logical way of linking buyers and sellers, writes Paul A. Strassmann. But, he warns, success in business-to-business e-commerce will be increasingly dictated by a firm's capacity to apply its economic clout to extract the lowest possible bids from potential suppliers. ▶ **48**

WISE INVESTMENTS
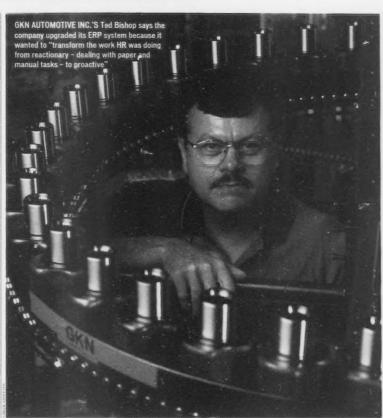
A few years ago, mergers made perfect sense for banks looking to cut costs and add IT services. But how well have the mergers met initial projections? Find out how some of the biggest bank mergers have fared over the years. ▶ **52**

HIRING HOMEWORK

Before shaking hands, it's important that both employers and new hires know what they're getting into. There are many resources that can help job seekers and hiring managers figure out who they're dealing with. ▶ **58**

MUSICAL TASTES

Copyrights are nothing new. But the Internet — and file-swapping sites like Napster — have sparked a widespread debate about free access to information vs. the legal rights of copyright holders. Which side will win the debate is still up in the air. ▶ **60**

GKN AUTOMOTIVE INC.'S Ted Bishop says the company upgraded its ERP system because it wanted to "transform the work HR was doing from reactionary – dealing with paper and manual tasks – to proactive"

THE NEXT PHASE OF ERP

DO YOU HAVE NIGHTMARES about that long, arduous enterprise resource planning (ERP) project that you endured a few years back? Would you like to upgrade the system? If your answer is yes, you're not a masochist. In fact, analysts say, upgrading an already-installed ERP system can yield big rewards.

56

BUSINESS

E-Businesses Struggle to Rally Troops for Growth

Managers say employees, not technology, pose the most challenges for online ventures

BY JULIA KING

SOUNDING LIKE a broken record is a common occupational hazard for executives who head up e-business initiatives.

Consider Toby Trevarthen, a vice president at AllAdvantage.com, an online infomediary company in Hayward, Calif. The company, which launched in April last year, has grown from one to 700 employees in the space of 13 months. And during that time, Trevarthen has had the same refrain: It's people issues, not technological ones, that present the greatest challenges in executing an e-commerce strategy.

"You get to a point where you have too many people doing things all at once, and you have to regroup," Trevarthen said during a presentation at a recent e-commerce strategy conference sponsored by Cambridge, Mass.-based Giga Information Group Inc.

Early on, for example, the company's information technology department "was trying to do everything for everybody," he said. In the process, it wound up ignoring the initial time line, he recalled.

"In the frenzy to get to market first, you don't always follow the plan," Trevarthen said.

Taking a Time-out

AllAdvantage's solution was to institute time-out periods. When things seem to be moving too fast, everyone goes to a conference room and hashes out their problems. Sometimes, the atmosphere can get pretty testy, but that's usually what makes the process most beneficial, according to Trevarthen.

"We have a lot of smart people with a lot of ideas, but conflict and tension is good. It often gets us to the best decision faster," he said.

At FedEx Corp., David Roussain, vice president of e-commerce, said his biggest challenge early on was rallying 20,000 employees around the Memphis-based firm's transition from overnight shipping business to electronic supply-chain services provider.

That meant getting workers to understand the company's new role in customer ventures such as Garden.com Inc., an Austin, Texas-based electronic retailer of plants and garden products.

FedEx doesn't just handle home delivery of Garden.com products that consumers order

online; it also electronically links to more than 80 of the retailer's suppliers via the Internet and tracks the ordering and shipping of more than 20,000 items in Garden.com's supply chain.

An Online Business Manifesto

Roussain and his e-commerce marketing team came up with what is known as the FedEx E-Business Manifesto, a document that traces the firm's history, explains who its customers are and defines its future online business path.

FedEx wanted to describe to its employees its role as a company that specializes not only in shipping but in designing and executing electronic supply-chain strategies.

"We needed to have a rally-

> **We needed to have a rallying point to move employees to the Internet.**
>
> DAVID ROUSSAIN, VICE PRESIDENT OF E-COMMERCE, FEDEX CORP.

ing point to move employees to the Internet. We wrote it down and made it relevant by showing how each project in the company fits in," Roussain said.

Today, the manifesto, which was written in 1998 but is continually updated, is given to all new employees and is used in virtually every aspect of FedEx's business, from creating new products and services to writing speeches for executive presentations.

The manifesto essentially functions as a benchmark, which is a critical element in any online business strategy, according to Giga analyst Larry Paul, a former IT executive at Farmington, Conn.-based Carrier Corp.

"Measurement is absolutely critical in moving forward in e-business," Paul said.

"Companies that succeed at transforming to e-businesses are also good at change management," he noted. "There's constant change. E-business planning is not an event. It's a process." ▶

Student Interns Hand Out Mixed Grades to Employers

Rating site reveals recruiting potential of intern programs

BY JULEKHA DASH

Most student interns are accustomed to having their performance graded both inside and outside the classroom. But a handful of students at Carnegie Mellon University in Pittsburgh have turned the tables with their month-old Web site InternReview.com.

Students from any school can anonymously post information at the site on a company's dress policy, salary and perks and give the experience an overall rating from one to five stars.

"We received a lot of recognition from upper management," wrote one student, who gave a five-star rating to his internship at Memphis-based FedEx Corp. "I was really surprised by the amount of trust

and responsibility my director gave me during the internship."

In contrast, a student intern at a Pittsburgh-based manufacturer said the company "didn't really give me too much to do. I spent a lot of time being bored and just chatting online."

InternReview.com, which operates under the name ThinkCo Group, was founded by a group of Carnegie Mellon computer science and business students, many of whom had had poor internship experiences, said Ron Urwongse, the site's president and a Carnegie Mellon junior. But group members had also heard stories from students who had worked in challenging and interesting positions. So they decided to launch a site that lets students know what they're getting into before they sign up for an internship.

The site hopes to eventually add a feature that lets managers review students' résumés.

Julie Yancey, director of worldwide people develop-

ment at FedEx, said she would definitely use the résumé search capability to find candidates, once it's available.

FedEx places a lot of weight in its internship program, she said. The company annually employs about 120 interns worldwide.

In addition to a monthly salary between $3,000 and $4,000, FedEx internship perks

Making the Grade

Two excerpts from InternReview.com:

Company type:
Aerospace defense

Comments: "Wrote Web front end for legacy systems in VB, Java. . . . Created Web-based finance tools using . . . lots of training."

Rating: ★★★★★

Company type:
Pharmaceutical

Comments: "They have no separation between work and life. Oftentimes, people will come in and work on Friday and Saturday nights. Free thinking is not encouraged. Opinions are not accepted well."

Rating: ★★
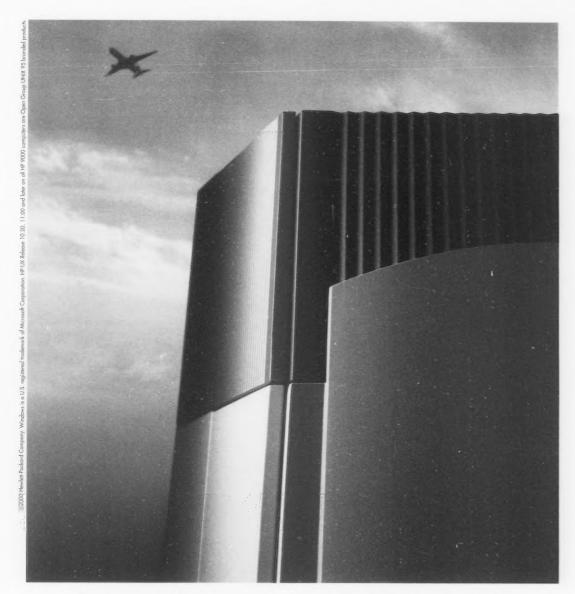
include corporate housing, paid travel expenses and assistance with finding social events either at the company or within the local community, said Yancey.

Like at many companies, internships at FedEx often serve as a hiring pipeline, and more than half the company's interns later accept jobs there. To further boost its intern placement rate, this year, FedEx began using former student interns as a recruiting resource during campus job fairs, said Yancey.

Students "typically listen to their peers [rather] than [to] a bureaucrat from a corporation," said Yancey.

Because of the demand for student interns, FedEx offers interns only to those managers who are willing to hire a student after graduation, barring any work ethic or personality issues, Yancey said.

These days, because of the tight skilled-worker pool, the biggest mistake companies can make is in not paying attention to how many interns come back to work for them after graduation, said John Challenger, president and CEO of Chicago-based workforce consultancy Challenger, Gray & Christmas Inc. ▶

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hp invent

Kmart Puts IT Overhaul in New CIO's Hands

VP given more responsibility than her predecessors

BY CAROL SLIWA

Kmart Corp.'s new CIO, Randy L. Allen, is the fourth person to hold that title in the past five years.

But as the company moves forward with a major investment in its information technology systems, Allen will take on an expanded role over her predecessors and will serve as executive vice president of corporate strategic planning, a spokeswoman at the Troy, Mich.-based retailer said.

Allen will have more money at her disposal than many of her predecessors. Kmart recently announced plans to spend $670 million on technology and logistics this year, part of a two-year, $1.4 billion plan to revamp its IT systems and improve its execution and store performance, the spokeswoman said.

"That's more money than Kmart has spent in the last decade on IT," she added.

Jim Dion, president of Dionco Inc., a retail consulting firm in Chicago, said he has long suspected that budget constraints were responsible for the departures of Kmart's previous CIOs.

"I just think they get frustrated and leave," Dion said, adding that Kmart "finally seems to be bellying up to the bar to pay what they need to get current."

Joseph Osbourn, Allen's immediate predecessor, joined Kmart last fall as the company continued efforts to rebound to profitability after stinging losses in the mid-1990s and in its fight to keep pace with Bentonville Ark.-based Wal-Mart Stores Inc. and Minneapolis-based Target Corp.

Dion noted that Kmart has "a lot of catching up to do, particularly on the logistics side and the store systems side."

Allen joins Kmart from New York-based Deloitte Consulting in New York, where she was a partner specializing in retail, apparel, manufacturing and distribution industries. She was previously a consultant at IBM and The Boeing Co. in Seattle, and chief information and administration officer at Phillips-Van Heusen Corp. in New York.

RANDY L. ALLEN, new CIO at Kmart, won't be hampered by budget

Boston-based AMR Research Inc. analyst Janet Suleski said Allen's appointment is "probably not related to any spectacular failures on the previous CIO's part."

Suleski noted that Kmart CEO Chuck Conaway joined the company only recently, and might have wanted to bring in his own team. "I'm sure it's related to standard management turnover," she said.

"They're in a pretty tight situation now where they need to make a lot of changes in their IT infrastructure and deliver a lot of improvements quickly to keep their stockholders happy," Suleski said. ▶

PIMM FOX / VOICE FROM THE VALLEY

You can be a contender

REPUBLICAN PRESIDENTIAL contender George W. Bush uses it. So did Bill Bradley. Al Gore's campaign started using it right after announcing the selection of Joseph Lieberman as Gore's vice presidential running mate.

They're all using the Internet, combined with powerful, easy to-use software, to go after voters, dollars and volunteers. And it's changing the way campaigns are run.

"The Internet and computing power have turned the PC from a numbers cruncher into a communications tool," says Jim Ross, director of public affairs and political campaigns at Solem & Associates, a campaign consultancy in San Francisco.

This year's presidential election is proving the formidable capabilities of the Internet to raise cash. Former presidential candidate Sen. John McCain (R-Ariz.), for example, pulled in more than $1 million within 48 hours via the Internet from contributors who were galvanized by his landslide victory in the New Hampshire primary earlier this year.

"About 15 years ago, nobody knew how to work with voter files and do the numbers. But now in California, there are three or four people and two or three consultants who can help campaigns manipulate these databases," says Ross. "If you are going to run for office, you have to work with data vendors. If not, you will lose."

The databases consist of voter records crossed with real estate records as well as other databases, which could include everything from motor vehicle registrations to phone book entries. And now you can add an Internet component: your e-mail address and location.

All this emphasis on targeting the right voter stems from what Ross describes as the fragmented nature of those who vote.

"The campaign is getting more and more scientific as candidates try and find who they need to talk to in order to win," he says.

A Big Boost

In addition to more computer firepower to target voters, raising money online received a boost from the Federal Election Commission (FEC). Last year, the FEC accepted the Bradley campaign's request to recognize for federal matching funds contributions to political campaigns made by credit card.

One firm with a history of helping run campaigns is Washington-based Aristotle International. The company — whose clients include Bush, 45 senators and more than 200 members of the U.S. House of Representatives — recently signed a contract with Mountain View, Calif.-based VeriSign under which VeriSign and its customers will be able to authenticate the age or identity of their Web site users against Aristotle's database of voters. Aristotle, in turn, could use that information to target banner ads to specific users — designed, of course, to sway votes.

It's the same tactic that businesses have been trying to execute: Target customers using cookies, e-mail marketing and databases.

While the software used to cross-reference different databases is fairly rudimentary, the use and implications of the information gathered is sophisticated. Of course, companies such as Aristotle are just responding to market demand, and when one use of a database proves ineffective, another one will pop up to take its place. In business, that's called marketing; in politics, some might think it intrusive.
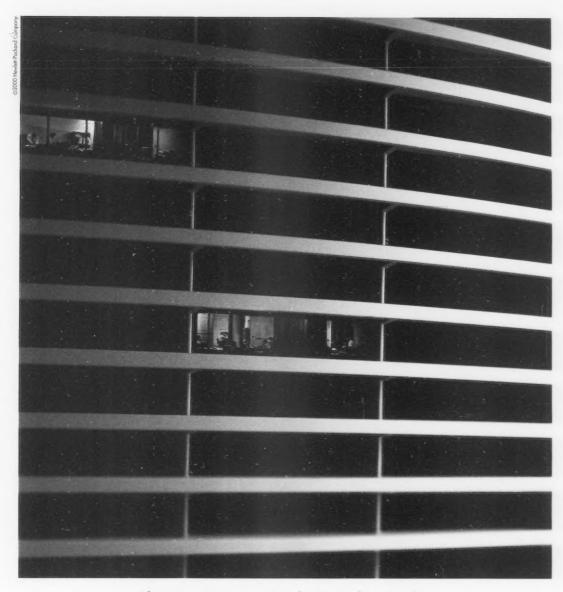
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"Some people say that voters are apathetic because of the scientific ways in which we run campaigns," says Ross. "I don't know. I get hired to run and win campaigns. I don't get hired to get more people to vote." ▶

PIMM FOX is *Computerworld*'s West Coast bureau chief. Contact him at pimm_fox@computerworld.com.

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Nonprofit Hopes Third World Procurement Goes Electronic

BY MARIA TROMBLY

The Global View Network (GVN) hopes to bring the Internet to developing nations.

The Washington-based nonprofit organization plans to create Web-based procurement systems that Third World governments can use to connect more easily to the world.

The plan is to build an alliance of nongovernmental organizations, government agencies and corporations that would "destroy the information gap" between rich and poor countries, said founder Howard Cohen. The problem, he said, is getting someone to build the infrastructure without being paid up front.

"It takes a lot of serious alliances to get this to work," said Dr. William Tiga Tita, CEO of the U.N.'s Industry Trade Information Network, which connects the chambers of commerce from the U.N.'s Group of 77 (G77). G77 is a coalition representing 133 developing nations. The network will be a contact between GVN and G77 nations.

Cohen said General Electric Co.'s Global Exchange Services unit has agreed in principle to be lead contractor for the system, which is scheduled to launch early next year. But Stanley Haavic, a marketing manager at Fairfield, Conn.-based GE, said his company hasn't decided yet.

Cohen said GVN plans to collect a commission on each order made through the procurement system. One percent of each sale would go to the government and 1% to the participating supplier.
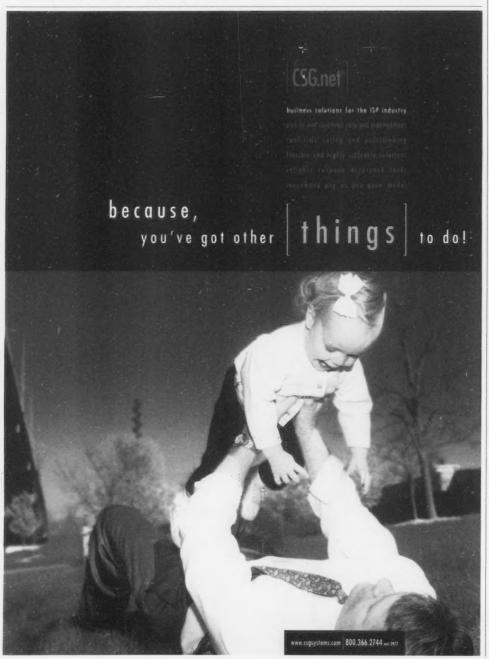
"The attraction is that there's no up-front investment for the government, no World Bank loans," Cohen said. GVN is negotiating with about a dozen countries, he said. None have committed to participating.

The commissions collected will go into an escrow account from which GVN and its partners will be paid. Leftover money would be used to fund health care projects and other public-service initiatives.

World governments currently spend $4 trillion a year on public procurement out of a total world product of $30 trillion, according to a report by the Inter-American Development Bank, a Washington-based regional funding agency.

A country that spends $3 billion per year buying everything from medical supplies to military equipment could save $500 million per year, Cohen said.

"The project sounds like it would have the beneficial effect of opening up some countries' procurement systems to more sunlight," said Bruce McConnell, president of Washington-based global technology-management consultancy McConnell International LLC. "But not all countries are going to be ready to open up their procurement system to that much sunlight." ▶

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BUSINESSOPINION

PAUL A. STRASSMANN

The impact of B2B

WITH THE PROLIFERATION of business-to-business Web sites, we're witnessing the emergence of the phenomenon of oligopsony — what economists call a condition where many sellers encounter only a few buyers. For instance, U.S. military weapons manufacturers have only a few customers (governments). So far, oligopsony transactions have been rare because of difficulties in coordinating purchasing decisions among competing sellers.

But Web-based business-to-business auctions have changed that. They offer ideal conditions to operate purchasing alliances. If fully developed, they'll likely lead to a global concentration of purchasing power. When that occurs, it will influence how corporate information technology is run because the alliances will realign the management of global logistics.

Already, B2B alliances are forcing corporations to re-examine procurement and sourcing strategies. This kind of turmoil will help bring the CIO into the corporate boardroom to offer advice on how a firm might counter the potential erosion of profit margins when B2B arrangements help lower costs.

But before you plunge into any B2B venture, consider that success will be increasingly dictated by a firm's capacity to use its economic clout to get the lowest possible bids from suppliers.

For example, consider Covisint, the online purchasing consortium just approved by the Federal Trade Commission, representing Ford, GM, DaimlerChrysler, Nissan and Renault. These five firms account for 44% of the cost of goods sold ($379 billion industrywide) and 91% of net profits ($20 billion) of the entire global automobile industry. These firms expect to realize material cost reductions from their adoption of Covisint-based procurement methods because Covisint's economic power will give its members pricing leverage over an estimated 50,000 suppliers. (The FTC and German authorities are still concerned about potential antitrust violations, though.)

If you're the CIO of Honda or Mack Trucks, you'll have to decide whether to adopt the data formats, procurement procedures and information-processing methods, plus a large collection of rules for the conduct of business as defined by Covisint, set up your own B2B site or join some other alliance that would compete against Covisint.

Another example of leverage is the Exostar purchasing consortium of Boeing, Lockheed Martin, Raytheon and BAE in the global aircraft manufacturing industry. These four firms account for 71% of the total cost of goods sold ($96 billion industrywide) and 62% of net profits ($3.6 billion) in the industry.

It seems that many companies are recognizing that they can increase profits by joining in a cutthroat auction market where suppliers will have to rely on pricing and conformity with standard specifications to win business on terms and conditions that a handful of dominant firms will dictate.

IT managers should consider these points:

1. The enormous profit gains that can be achieved through B2B procurement will funnel most new IT investments to B2B ventures while scrapping much of "enterprise" systems that were only recently installed as mostly unsuitable to support B2B interenterprise requirements.
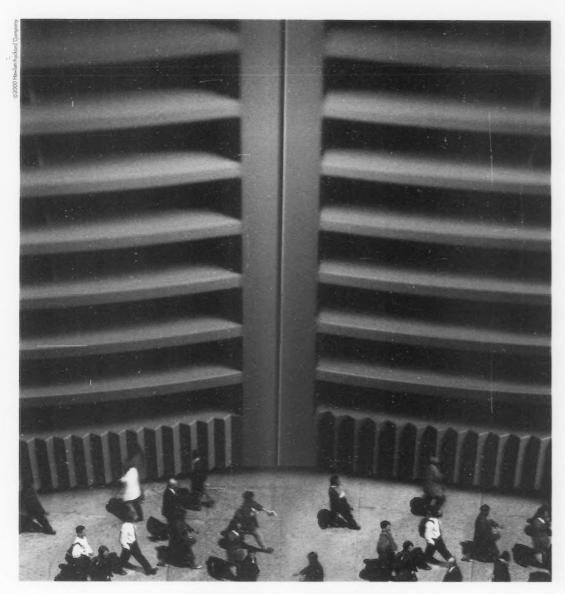
2. Most of the newly announced B2B firms will disappear. Purchasing consortia, dominated by the economics of only a few giant purchasers, will take over.

3. Unless a supplier has a clear-cut economic advantage, preferably technological, smaller companies will have to merge to successfully engage in B2B bidding contests.

4. The economic impact of B2B on global trade will generate negative political and regulatory reaction from governments concerned about their economic sovereignty. Ultimately, politics, not technology, will dictate the scope and power of B2B purchasing consortia. The alarms have been sounded already by the European Community, as well as by a number of Asian nations, concerning the overwhelming U.S. influence in forming B2B ventures. ▶

Most of the newest B2B companies will disappear.

Strassmann can be reached at paul@strassmann.com.

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O N A WARM spring day earlier this year, Jeff Albert came from Fort Wayne, Ind., to walk around the Civil War battlefield at Gettysburg, Pa. Albert says he was thinking about Col. Joshua Chamberlain's 20th Maine Regiment of Volunteers. On July 2, 1863, they defended the Union flank against charge after charge from Confederate forces up the hill known as Little Round Top.

"When the soldiers were out of ammunition, they fixed bayonets and ran down the hill. Historians say that unit's courage and commitment to its mission was the turning point of the war," Albert says.

It was a history lesson that Albert says has affected his life today. "I learned that no matter what our title or station in the organization, we can greatly impact the outcome by committing to our objectives and dutifully carrying them out," says Albert, second vice president and director of enterprise technology services at Philadelphia-based Lincoln Financial Group.

"Standing right on the spot where Chamberlain fought brought that lesson to life for me," says Gary Kern, assistant vice president and chief technology officer at Lincoln Life and Annuity Company of New York in Syracuse. The information technology leaders were among a group of Lincoln colleagues who had gathered for a special event in an ongoing executive education program known as the Lincoln Leadership Learning Forum.

Leadership Learning

"Lincoln has taken executive education to a higher level than most organizations," says Dick Dooley, founder and president of The Dooley Group Inc., a consulting firm that helped Lincoln develop and implement its program. Dooley is a former CIO and a co-founder of the Chicago-based Society of Information Management.

The forum isn't aimed at pounding technical or management content into executives' brains. Instead, Lincoln's internal program accepts approximately 24 committed participants per year. They meet once per month to discuss the books they are required to read, give and observe presentations on business issues, work on strategic planning, hear guest speakers and attend special events like the one at Gettysburg, Pa.

"I have a 20-year career in IT. I've been to management and leadership classes, and they tend to be technique-focused," says Albert. "The forum is different. It challenges who you are as a person, shakes up your paradigms and fundamentally changes how you operate. It's a sustained program of learning, where the results far exceed what a single class can do."

Now in its fourth generation, the forum "creates a common language and set of experiences for Lincoln executives," says Barbara Taylor, second vice president of employee development at parent company Lincoln National Corp.'s headquarters in Philadelphia.

Forum participants are also required to complete a "give-back" project that enriches the company. The first "class" compiled a book of favorite statements, books and speakers' quotations. The second class built a Web site and database to capture the forum's intellectual capital. The third class created a college-recruitment program and launched a mentoring program to improve retention.

The program has also had a positive impact on the IT organization at Lincoln, according to Albert and Kern.

Learning From History's Leaders

IT managers in the executive leadership program at Lincoln Financial Group find that history has many lessons in leadership that they can apply on the job today. By Jill Vitiello

LINCOLN LIFE'S Gary Kern says American history has taught him a valuable IT lesson

Lessons From The Forum

Participants in Lincoln Financial Group's executive education forum offer the following advice to IT managers who would like to sponsor their own programs:

- Dare to be creative but keep corporate culture in mind.
- Agree upon goals for the program.
- Secure top management buy-in and participation.
- Provide cross-functional networking opportunities.
- Expect executives to put new learning into practice.

"As a result of the forum, I developed a propensity to ask questions and seek feedback. We're building that into our IT processes so that we stay focused on the needs of our user community," says Albert.

A member of the first forum class, Albert now volunteers as a program facilitator. His continuing involvement has helped him build the mentoring skills that he applies to his own staff members.

"The learning trickles into your own performance and, ideally, improves the performance of the organization," he says.

Kern, a participant in the third class, found the experience immediately applicable to his job. "The forum enhanced my ability to leverage relationships with colleagues from various disciplines throughout the organization and to better understand their views on IT issues," he says.

Commitment to Education
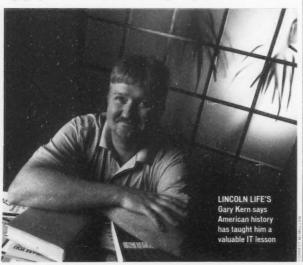
Lincoln's success with the forum is based on a strong commitment to executive education. The company also sends some of its people to university-based executive programs and provides tuition reimbursement for employees.
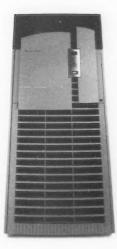
"It's important to match executive programs and learning to a company's culture," says Taylor. "Executive education should always push an organization, but not at the risk of disconnecting with the company. Lincoln learned this when we created a virtual corporate university called the Center for Breakthrough Business. We came up with a marvelous process and structure, but it was too far out of . . . our corporate culture. It's good for executive education to be progressive, but it has to be connected to what will work in the organization." ▶

Vitiello is a freelance writer in East Brunswick, N.J.

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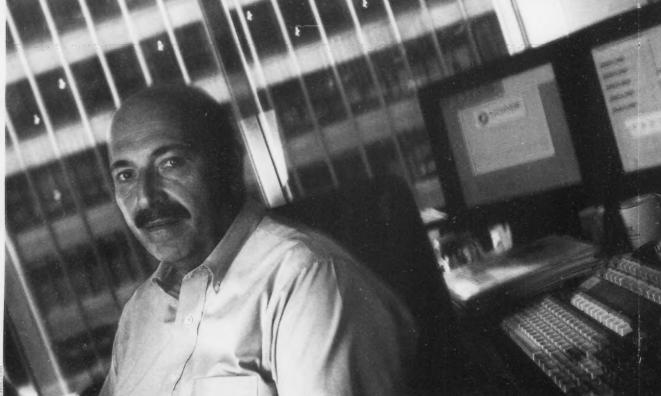
Recent big bank mergers, aimed in part at slashing IT costs, have yielded mixed results. By Gary H. Anthes and Kim S. Nash

W HEN MERGER MANIA SWEPT THE banking industry a few years ago, the logic for getting big quick was compelling. The onset of financial services deregulation had begun to open traditional banking markets to nonbank competitors such as credit-card and mutual-fund companies. Increased competition forced banks to seek cost-cutting economies of scale, yet huge investments in information technology were seen as necessary for developing electronic services and streamlining operations.

Indeed, the opportunity to cut IT operating costs while freeing up hundreds of millions of investment dollars to create new services was at the heart of many of the rosy premerger financial goals that CEOs presented to their shareholders. But just how well have these projections held up?

The results have been mixed. In many cases, the big cost savings promised from closing redundant data centers, combining back-office operations and applications and downsizing IT staffs have been realized. In other situations, cost savings have been elusive or, as some bank executives say, were never a goal in the first place.

Diogo Teixeira, executive director at research firm TowerGroup in Needham, Mass., says his rule of thumb is that an acquiring bank should be able to trim 30% to 70% off an acquired bank's IT expenses.

When banks fail to reach those savings, it may be because "they execute poorly; they spend so much money on the [system] conversions that savings are washed out," Teixeira says. In some cases, IT cost savings aren't the objective at all; the goal may be to get new and better systems, which may increase IT spending, at least in the short run.

Computerworld took an in-depth look at three of the biggest bank mergers in recent years and discovered some valuable lessons for IT leaders.

Chase/Chemical: A Grand Slam

The huge 1996 merger between Chemical Banking Corp. and The Chase Manhattan Bank NA was "close to a grand-slam home run," says Bill Bradway, research director at Meridien Research Inc. in Newton, Mass. "When you consider the scale at which the two organizations were at, the complexity of their business models, the technology they had to sort through — and to do it as efficiently as they did — that's a real positive commentary," he says.

Bradway estimates the cumulative IT cost savings at Chase have reached nearly $1 billion.

Richard F. Mangogna, CIO for wholesale banking at what is now The Chase Manhattan Corp. in New York, says IT cost savings from the merger are hard to figure. For example, spending on new computer capacity to handle double-digit growth in business and for year 2000 remediation during the merger period clouds the cost picture, he says.

Chase closed half of the data centers the two banks ran, which accounted for 85% of the total IT cost savings in the first two years, Mangogna says.

More recently, the bank embarked on a second wave of system consolidations.

Since 1998, Chase has been developing a global IT infrastructure, including databases and networks, that has thus far helped eliminate 700 redundant systems — such as general ledger and trading applications — around the world. "For example, instead of having a trading application in every major center around the world, we have a [single] global trading application," Mangogna says.

These recent system consolidations may generate even more IT cost savings than Chase has realized from the merger to date, Mangogna says. In its wholesale-banking application development budget alone, Chase expects to slash $100 million per year — beginning in about two years — by reducing maintenance expenses from 60% to 40% of the budget, he says.

Although a bank's financial performance is driven by many factors, IT clearly has contributed to the prosperity of Chase since it acquired Chemical Banking, according to Mangogna.

In 1995, the last full year before the merger, Chase and Chemical had combined operating earnings of $2.9 billion and a combined average return on equity of 15.8%. For last year, Chase reported earnings of $5.4 billion and return on equity of 24.2% — approximately a 50% increase in both these key performance measures. And while it's difficult to quantify the precise impact that IT has had on the bottom line, the cost cuts and operational improvements are evident.

Bank One/First Chicago: A $430M Shortfall

In November 1998, one month after its merger with First Chicago NBD Corp., Bank One Corp. said it expected to see $930 million in savings annually. Its most recent estimate, presented by a new CEO who was appointed last March, was $500 million.

While some systems have indeed been integrated, such as the two banks' credit-card and investment banking activities, observers agree that Chicago-based Bank One is behind in meeting its IT cost savings targets. In July, CEO Jamie Dimon acknowledged to Wall Street analysts that customer service has been poor, in part, because some key systems remain separate.

For example, Bank One began its First Chicago merger with 20 different demand deposit systems that needed to be integrated. But the integration was stopped last year when prior management needed to show a short-term cost savings and postponed the investment needed to carry out the consolidation effort, Dimon says.

The bank now plans to meld those systems by the end of next year. "If we don't put the systems together, we will die a slow death," says Dimon.

Ralph Bierdeman, manager of corporate programs at Bank One, says the bank has "generally met" its original integration schedule, but he acknowledges that "there's a whole lot more we want to do." Bank One has lagged behind other banks in consolidating systems for several reasons, says Bierdeman, who oversees bankwide integration

RICHARD MANGOGNA at Chase Manhattan Corp. says IT savings from the the 1996 merger of Chase and Chemical Banking Corp. are hard to pin down

projects. Year 2000 remediation, for example, partially dictated which systems got immediate attention, he says.

Moreover, both banks had systems that still hadn't been integrated from previous mergers, he notes. Within the old Banc One, for example, deposit systems in Texas and Louisiana are different from those in Arizona and Utah.

Bierdeman also notes that the size of the two banks was a complicating factor in the merger. "It's hard to say whether it didn't go as well as it should have. We never did one on that scale before," he says.

And several areas are integrated, Bierdeman adds. They include the banks' trust, brokerage, investment, credit-card and car-financing operations, as well as human resources and general ledger activities.

Other integration efforts are in the pipeline. In consumer lending, all new loans are processed on the old Banc One's system, while existing loans are processed on each bank's existing legacy system.

First Union/CoreStates: A Mixed Bag

First Union Corp. says it has achieved the $80 million per year in IT cost savings the company projected when it acquired Philadelphia-based CoreStates Financial Corp. in April 1998. Unlike Chase, which says its systems consolidation effort will continue indefinitely, Charlotte, N.C.-based First Union completed all of its merger-related IT work within a year of announcing the $17 billion deal, says Jim Chester, senior vice president of automation and operations.

But despite the apparent success of the First Union/CoreStates union from an IT cost-cutting standpoint, it was a rocky marriage for customers. To meet its ambitious cost-cutting goals, the bank closed more than 100 branches and laid off thousands of employees. In addition, as part of First Union's Future Bank strategy, bank employees were redeployed from basic, front-line customer service functions to jobs selling highly profitable items such as insurance and investments.

IT was a cornerstone of the Future Bank program as First Union rolled out "cost-efficient delivery channels such as telephone banking, enhanced ATMs, card products and online banking," as it said in its 1998 annual report. But the new program also meant that CoreStates customers who were accustomed to face-to-face interactions were increasingly sent to information kiosks or call centers.

Customers deserted in droves. According to published reports at the time, First Union lost nearly one-fifth of its CoreStates customers. In addition, First Union lost 9% of CoreStates' deposits and 14% of its loan business as a result of the defections, analysts said. First Union officials declined to comment on these issues.

First Union's postmerger cutback in labor-intensive branch services "helped them short term say they reached their cost-cutting goals, but not in the long term because they lost customers," says Ron Mandle, an analyst at Sanford C. Bernstein & Co. in New York. "If you pay a big price [for a bank — First Union paid 22 times its earnings for CoreStates], then you have to be very aggressive in cost cuts, which means you're taking more risk in customer service."

CoreStates was much larger than any bank that First Union had ever acquired, and Chester says First Union underestimated the complexity of CoreStates' commercial systems. For example, First Union should have proceeded more slowly in converting the complex, customized processing that CoreStates had set up for its large corporate accounts, he says.

In May last year, Edward E. Crutchfield, First Union's chairman and CEO, announced that last year's earnings would be approximately 15% lower than originally forecasted. The reason, in part, was slower-than-expected revenue growth from the region served by CoreStates and from the bank's Future Bank and Internet initiatives.

Crutchfield also said these initiatives were part of a "new business model that no longer includes bank acquisitions as a fundamental part of our strategy." ▶

> If we don't put [20 different demand deposit] systems together, we will die a slow death.
>
> JAMIE DIMON, CEO, BANK ONE CORP.

Banking on Experience

Banks' postmerger IT cost-saving projections often amount to a public posture that's aimed, in part, at convincing Wall Street investors and shareholders that the deal makes sense. But the cost-savings targets often aren't closely monitored internally by the banks, says **David Potterton**, an analyst at Meridien Research. "I'm not saying they put a [cost savings] number out knowing it's false. They think of it as a goal. But if they fall short, specific IT managers don't lose their jobs."

Even Wall Street experts often can't tell whether a bank has wrung promised cost savings from IT, says **Kate Blecher**, a managing director at Sandler O'Neill & Partners LP, a New York investment bank. That's because IT integration plans change frequently as the real work of a merger unfolds in the two or three years following the back-slapping announcement of a deal.

Despite these changes, there are a few secrets to success for IT managers when financial institutions join together. Success factor No. 1: Experience counts. Chase attributes much of its success in its huge 1996 merger with Chemical Bank to lessons learned from Chemical's painful and protracted acquisition of Manufacturers Hanover Trust Co. five years ago. **Richard F. Mangogna**, CIO for wholesale banking at Chase, offers these comparisons:

■ In the Manufacturers merger, data centers were closed during the first year to gain savings quickly, but the bank came dangerously close to running out of mainframe capacity. Chase took two and a half years to consolidate data centers in the Chemical merger to allow for extra testing, and the capacity turned out to be vital when business grew faster than expected.

■ In the Chemical/Manufacturers marriage, a transition team evaluated each application individually based on a detailed comparison of features and functions. But in the Chase/Chemical merger, some 2,500 applications were clustered into just 67 logically related groups, and choices were made by group. And they were based on just six criteria, not a laundry list of features.

■ In the first merger, a new information systems management team was chosen months after analyzing the banks' respective IT assets. But in the subsequent merger, management members were picked almost immediately, and then the team worked as a unit to choose among its IT assets.

"We learned that trying to find the 100% solution is a waste of time," says Mangogna. "The stress you put on the whole institution is tremendous."

– Gary H. Anthes and Kim S. Nash

BUSINESS

FOR SOME businesses, the productivity gains that are drawn from their first enterprise resource planning (ERP) systems often whet their appetites for more functionality. Process improvements, granular information analysis and better positioning for e-commerce with customers and suppliers are just a few of the possible perks of upgrading to a newer release.

Nevertheless, these companies are the exception to the rule, since many battle-scarred ERP veterans wince at the thought of revisiting those painful and lengthy initial installations. "The vast majority tend to avoid major upgrades and stay on an older release, as long as it can meet their business needs," says Bruce Fram, president of Luminate Software Corp., a Redwood City, Calif.-based firm that monitors ERP systems and other applications for Fortune 1,000 companies.

Still, there are the hearty few who are willing to upgrade their systems in order to squeeze out even more business process improvements.

For example, streamlining human resources operations was the rationale behind GKN Automotive Inc.'s upgrade to Pleasanton, Calif.-based PeopleSoft Inc.'s PeopleSoft 8.0, which began last month. The Auburn Hills, Mich.-based maker of drive shafts for front-wheel-drive vehicles is upgrading from PeopleSoft 7.5, which it installed last year.

GKN's decision was driven by the company's human resources strategy to move to employee and manager self-service technology, says Ted Bishop, project manager for human resources information systems at GKN. The software will provide employees with the ability to directly change personal information such as marital status, dependents, tax withholding and 401(k) plans "instead of using the HR department," Bishop says.

Meanwhile, managers who are burdened with paperwork, approvals and benefits questions will be able to use the self-service system to initiate pay increases, find out when new salaries will kick in and answer other questions.

"We weren't looking for cost savings but to transform the work HR was doing from reactionary — dealing with paper and manual tasks — to proactive, being on the cutting edge, making people better employees," Bishop says. PeopleSoft 8.0, he adds, turns human resources into a 24-hour service, eliminating data-entry functions. It also has about 10 times the employee self-service functions as PeopleSoft 7.5.

Play It Again, SAP

The Allstate Corp. has a more efficient financials area and is better positioned technologically to provide customer service, thanks to a minor upgrade from SAP 4.3 last year.

Mary Fontaine, director of enterprise reporting and analysis at the Northbrook, Ill.-based insurer, says the upgrade to SAP 4.5 has added functionality in the financials area and for expense processing. "It's now more efficient, and we're able to run functions in parallel," such as allocations, she says.

Prior to the upgrade, says Fontaine, allocations were processed in sequence, which required each job to be completed before the next one could be started. With the SAP upgrade, all those jobs can now be processed at the same time, 40% faster than before. What once took six days can now be finished in three and a half days, says Mike Wahls, an Allstate project director.

Squeezing More Out Of ERP

For the brave few, upgrades of ERP systems can yield big rewards. By Sharon McDonnell

BUSINESS

Amherst Corporate Computer Sales & Solutions, an online seller of IT products and services to companies such as San Francisco-based Genentech Inc. and Santa Clara, Calif.-based National Semiconductor Corp., found measurable productivity gains, thanks to two successive upgrades of Denver-based J. D. Edwards & Co.'s OneWorld software last year.

"We've seen a 20% productivity increase in terms of sales per employee since we deployed OneWorld, and with every upgrade since," says Paul Ramirez, vice president of marketing at the Merrimack, N.H., firm, whose sales last year topped $300 million.

Sales per employee at Amherst first dipped from $229,000 in the third quarter of last year to $213,000 in the following quarter, due to organizational restructuring and Y2k-related issues.

Sales per employee then rose to $224,000 in the first quarter of this year and $252,000 in the second quarter. "There's no doubt sales increased in early 2000 due partly to pent-up demand from Y2k, but the real issue is how efficiently we are managing those transactions," Ramirez says.

"We're moving transactions better and moving our information with greater precision," says Kevin Hall, Amherst's chief technology officer. "Since we have no inventory, knowing very precisely exactly where your order is is crucial."

Now that 60% of the company's sales are Web-assisted, customer and product information has to be "dead-on," says Hall. "There's no tolerance for error. We've built personalization features into the tools so customers view only products which are relevant, based on their order history."

Testing is crucial when implementing any ERP upgrade, and Amherst uses "a pretty rigorous approach," Hall says. Once its information technology team sees that the system is running properly on the test platform, Amherst extends it to the departments with people from a cross-section of the company.

Sometimes, even a minor "point" upgrade can make a whopping difference. That's what happened when Cybex International Inc., a manufacturer of high-end fitness equipment for gyms and personal use, upgraded from PeopleSoft 7.5 to 7.52 in October last year. "The upgrade was painful, but it was night and day — 7.52 added so much functionality," says Brian Lyman, manager of e-commerce at the Medway, Mass.-based firm.

For example, PeopleSoft 7.52 helps Cybex manage its customer database better. "It allows us to build customer roles and associations — for example, if a health club leases our equipment, we don't have to go back and forth between one and the other," says Lyman.

Since the company's online store was launched last December, Cybex customers have been able to place orders into its backbone system, track orders and see what Cybex sees. "Some of our equipment is made-to-order: the product configuration module lets customers pick colors for the frame and upholstery without the re-entering other modules require," thus shortening the product ordering cycle, says Lyman.

Nevertheless, Cybex had to sweat through some bugs in PeopleSoft 7.52 and needed the vendor's help to get the system running properly, says Lyman.

No Pain, No Gain

For Schurman Fine Papers, a designer and distributor of greeting cards, stationery and gift wrap to retail chains like The May Department Stores Co. and Target Corp., the impetus to upgrade its older J. D. Edwards WorldSoftware legacy system is coming from its electronic data interchange (EDI) provider.

Schurman's upgrade last December didn't generate enough information to its EDI provider, Harbinger Corp. (now Peregrine e-Business Connectivity Group, after being acquired by San Diego-based Peregrine Systems Inc. in June), to map and format the EDI transmissions properly when product shipping for this Christmas season began in July. So the firm was forced to do considerable customization. "The software didn't go down to the right hierarchical level required by our trading partners — they had no idea what was in each box," says Bob Jellison, vice president of IT at Schurman in Fairfield, Calif.

This meant identifying fields in existing table structures, with actual box numbers and universal product codes for each item; scanning each box; and providing additional coding to sort it properly, he says. Schurman will probably upgrade to version A8.1, which Peregrine says is more compatible, sometime next spring, Jellison adds.
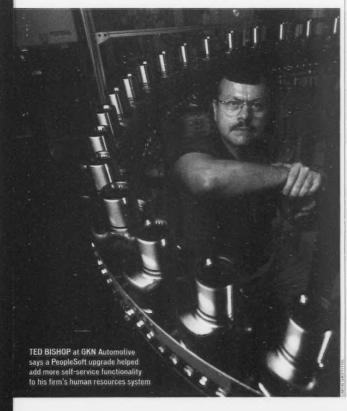
"We realize J. D. Edwards is not in the EDI business and [Peregrine] is not in the ERP business, but we need them to work together without getting in each other's backyards," he says. ▶

McDonnell is a freelance writer in New York. Contact her at sharonfmc@compuserve.com.

TED BISHOP at GKN Automotive says a PeopleSoft upgrade helped add more self-service functionality to his firm's human resources system

Ten Critical Success Factors For ERP Upgrades

1. Spell out the strategic, tangible business and operational benefits and find ways to measure success in achieving them. Assign accountability and authority for those goals.

2. Make sure all top management is united behind the business goals driving your upgrade.

3. Because the biggest challenge is change management, retrain staff not only with new technical skills but also with skills that often result from upgrades and new job descriptions.

4. Make good decisions faster that balance schedule and cost vs. benefits and risk. This is especially important because such projects cross functional lines.

5. Implement creative incentives for your project team to reward their hard work and increased value.

6. Be rigorous about project management and the implications of your partnerships with consultants.

7. Look at the big picture, establishing a global architecture before deploying locally. Too many projects begin with a small pilot or in phases and then need to be redone when taken to other business units or countries.

8. Do process re-engineering before and during the project. It's a mistake to think you can do this later or focus on installing the software first, which often includes many decisions on process.

9. Pay attention to demanding training and support needs. Don't try to save money by cutting training costs.

10. Focus and align your organization, team and scope. Your organization needs to understand why the project is worth the pain of change. Your project team needs full-time members, minus the distractions of their real jobs. Your scope needs to be tightly focused to resist the temptation of widening the scope and reworking the project plan.

SOURCE: SURGENCY INC., CAMBRIDGE, MASS. (FORMERLY BENCHMARKING PARTNERS) WHICH SURVEYED 400 ERP USERS.

When it comes to job seekers and hiring managers learning about each other, traditional methods are still preferred by most. But just what each one wants to know about the other depends on the job and the level of responsibility. By Steve Alexander

IT JOB CANDIDATES: 'HEARD IT THROUGH THE GRAPEVINE'

DESPITE THE WEALTH of company information on the Web and in newspapers and trade publications, many information technology professionals seem to still glean their best information about prospective employers from traditional sources such as the industry grapevine, recruiters and job interviews.

James Forbes found that recruiters were his best source of corporate information.

Forbes, an experienced enterprise resource planning (ERP) implementer, recently started a new job as a senior business systems analyst at the fluid-handling systems division of ITT Industries Inc., an automotive industry supplier in Auburn Hills, Mich. Forbes, who says he knew he wanted to be part of an ERP implementation in manufacturing, learned about the job and the company through AJM Professional Services in Troy, Mich. He turned to the recruiting firm after unsatisfactory job-search experiences with industry professional contacts and newspapers.

But it was the job interview that sold Forbes on ITT. Unlike at other companies, which gave him routine interviews, he says, the hiring manager at ITT seemed genuinely interested in someone with his qualifications: a 50-year-old nonprogrammer with a wealth of ERP implementation experience.

"I knew from the interview that they previously had tried a manufacturing engineer in the position, who didn't work out. But I didn't care, because my new supervisor was very excited about me as a manufacturing consultant," Forbes recalls.

John Carroll, a Web developer with a master's degree in computer science and eight years of experience, last summer chose a new dot-com job based on what he could glean from the Web and his friends, plus some shrewd observations of his own about the Web sites of prospective employers.

Carroll's situation points up an interesting problem for today's IT job seekers, who are often faced with multiple offers but are then left to their own devices to make the right choice.

"I really was agonizing over this, because I had some great offers," says Carroll, who finally accepted a position at ComputerJobs.com Inc., an IT job-posting site in Atlanta. "I would get up early in the morning and look at these Web sites to see what I liked best. I began to notice that the other site I was considering — an Atlanta-based Web portal — was down every morning at 5 a.m. to make changes in the site. And I knew that they were so small a company and so bleeding edge that I would be the one there at 5 a.m. every morning. I decided that I did not want to be the one responding to a pager at 4 a.m., because I did that earlier in my career."

Carroll also came to another conclusion, this one born of his own experience: The Web site that was

> I really was agonizing over this, because I had some great offers.

JOHN CARROLL (ABOVE),
WEB DEVELOPER,
COMPUTERJOBS.COM INC.

Getting To Kno

BUSINESS CAREERS

down every morning also seemed to have the more nebulous business model of the two. Although both dot-coms were so tiny that they had generated little news coverage, he managed to find one story that said ComputerJobs.com had generated some profits. Meanwhile, the privately owned portal company's finances were a mystery. Carroll decided that a sometimes-profitable company with an apparently better business model was a safer career choice.

Another consideration was human resources. The company Carroll chose had a full-time human resources person; the other had a part-time one who doubled as the chief financial officer. Carroll has had a kidney transplant and requires medication, and if there were ever any disputed medical expenses, the company with the full-time human resources director would likely be more helpful, he says.

Sometimes, professional contacts and an inquisitive nature provide a window through which to view a prospective employer. Daryl Browdy, who recently joined the IT department of the Chicago Board of Trade as manager of order routing, learned the ins and outs of the Board of Trade's operations while working for a financial software vendor. Fascinated with the board's activities, he became a part-time trader on the exchange for six years, without expecting that he eventually would go to work there in an IT job.

Browdy, who manages systems that handle trading-floor financial transactions, found out about his current position by reading a job description on the board's Web site. He then checked out the IT department's management style by asking questions of recruiters and acquaintances at the Board of Trade.

Browdy also recommends that job seekers check into a company's financial stability; venture capital investments in start-ups and the earnings of publicly held companies are readily available in news reports. "You should research a company in the same way you would decide whether to make an investment in it," he says. It also doesn't hurt to ask why the last person left the job, he says.

IT MANAGERS: TECHNOLOGY WILL GET YOU HALFWAY UP THE LADDER

IT managers seem to value company knowledge less than technical expertise, at least among rank-and-file IT workers. But IT managers have different expectations of what a job candidate will know, depending on the rank of the job being filled. At the lowest ranks, technical expertise is valued far more than knowledge about the company. But that begins to shift at the level of project manager and above, where industry experience and company knowledge count more because the IT person is likely to have more contact with other parts of the company.

"If it's a leadership position, I clearly expect that the person applying will have enough of an interest to understand our business," says Mike Natan, CIO at Reliance National Insurance Co. in New York and Reliance Insurance Co. in Philadelphia. "I would expect that person to have some understanding of the competitive forces in the insurance business and who the big players are. Even first-level managers I would expect to have an interest in and some appreciation for the business."

Not so for those doing the coding. "For IT technicians, I'm not as concerned about that. If someone is a C programmer, we're more interested in his or her technical competence, work ethic and whether the person is a cultural fit with our particular environment," Natan says.

Job candidates can do some useful research for interviews by reading company and industry Web sites as well as news accounts, Natan says. But he says he believes company mission statements reveal little about what a firm is really like. Reading biographical materials on top executives you're likely to be interviewed by is worthwhile if you can find some way to relate to them on a personal level, he says.

Given the tight job market, some companies are willing to talk to job candidates at the programmer level who haven't done much homework on them. The idea seems to be that a candidate who has no opinions about a company may be easier to convince of its virtues.

"It doesn't bother me if they don't know about the company," says Laurie Rauch, CIO at Terra Industries Inc., a Sioux City, Iowa, manufacturer of agricultural chemicals and engine fuel additives. "I use that as an opportunity to talk about the company and sell them on it during the interview."

While Terra Industries prefers applicants for jobs at the project leader level or higher to have knowledge of the company, even that requirement has been relaxed due to the shortage of job candidates. "It's more of a luxury than a necessity," Rauch says.

But some companies expect even new college graduates to be company-literate. "We expect college candidates to know something about the company and what we do," says Tony DelDuca, vice president of IT at Nabisco Inc. in East Hanover, N.J.

"In the middle zone of IT, we look at whether people can do the job or not, and it's probably not so much based on whether they know a lot about what the company does. Sales, finance and marketing computer systems are pretty much the same everywhere," DelDuca says. But at the middle management level — which includes managers and directors — candidates "need a broad base of business experience in the consumer packaged-goods area," he says. "They need to do a lot of research about our company vs. other consumer packaged-goods companies." ▶

Alexander is a freelance writer in Edina, Minn.

MATCH MAKERS

Resources that can help job candidates research a potential employer

There's a long list of places that job candidates can look for information about prospective employers, although not all of the data you gather will be worthwhile.

■ **Company Web sites** are No. 1, since they can give you a feel for the company and, in many cases, insight into who the company's customers are. Knowing who the customers are may be indicative of the kind of work you will do.

■ **Mission statements** are also often found on Web sites, but their value is questionable. Mission statements have a certain amount of "Jello factor," says Marco Nicolayevsky, chief technical officer at MisterArt.com, an online discount art supply store in Atlanta. "They may not define the company 100%, but they can take you 30% of the way there."

■ **Press releases and news articles** about companies can also be found by using Web search engines. Both must be viewed with some suspicion, since they can be one-sided. Nicolayevsky recommends Dun & Bradstreet Inc. (*www.dnb.com*) reports on companies, which are relatively inexpensive and offer third-party objectivity.

Christopher Lowden, director of research at recruiting firm Goodrich & Sherwood Associates Inc. in New York, recommends Corporate Technology Information Services Inc. (*www.corptech.com*), which specializes in profiles of technology companies.

■ **Executive biographies** posted on Web sites may also be helpful. The trouble is that these people may be several layers above the person you'll be working for, so the information may not be relevant. But if you're lucky enough to be interviewed by one of these people, the information could help.

For example, if you share an area of expertise with the interviewer, find a way to bring that up during the conversation, says Mike Natan, CIO at Reliance National Insurance Co. in New York and Reliance Insurance Co. in Philadelphia.

■ **Interviews** can also be a source of information. In a nod to the tight labor market, IT managers seem to be willing to be interrogated by job candidates about their companies and aren't shocked to be asked such probing questions as, "Why did the last person leave this job?"

"I'm not offended," says Tony DelDuca, vice president of IT at Nabisco. "I asked the same kinds of questions when I was interviewing." *– Steve Alexander*

Copyright

DEFINITION

A copyright provides a person or organization with the sole legal right to reproduce, publish or sell an original work, including literary, dramatic, musical, artistic and certain other intellectual creations. There has been a flurry of recent controversy about the unauthorized use of copyrighted materials on the Web.

BY MEGHAN HOLOHAN

REMEMBER THE days when you would record a song off the radio instead of buying the whole tape?

Now there's Napster, which lets you download songs off the Internet and play them on your computer.

But the Washington-based Recording Industry Association of America (RIAA) decided that Napster crossed the line, and a federal judge agreed. The music-sharing site was ordered to stop making copyrighted materials available without authorization.

Sites like Redwood City, Calif.-based Napster Inc. have sparked a wave of debate about online freedoms vs. the rights of copyright holders to protect themselves and their works. And while the recording, publishing and movie industries have always paid close attention to copyright infringement, they say the Internet has caused them to fear massive revenue loss more than ever before. (Napster and the RIAA refused to comment for this story.)

Copyright infringement occurs when a person "claims" someone else's work as his own by distributing it and using it without permission from the copyright holder.

But it's not that simple, says Robin Gross, staff attorney at the San Francisco-based Electronic Freedom Frontier.

"The author has rights to their work, just as the public

PRO COPYRIGHT

"

Napster seriously compromises the recording industry's business plan.

KEN DORT, COPYRIGHT LAWYER AND PARTNER, GORDON & GLICKSON LLC

PRO ONLINE DISTRIBUTION

"

The record companies can either adapt to this or die. My bet is they'll die.

ERIC S. RAYMOND, CO-FOUNDER AND TECHNICAL DIRECTOR, CHESTER COUNTY INTERLINK

has rights to it," she says. "Authors can prevent reproduction and distribution, and the public has the right to use it fairly." Fair use and public-domain use let the public make a certain number of copies for personal use, Gross adds.

For example, if someone copies a few paragraphs of a news article to include in a report, then it's probably fair use, because it isn't used for commercial purposes, the whole article isn't used and the copying doesn't affect the newspaper's market, Gross says.

A Bigger Venue

But Ken Dort, a copyright lawyer and partner at Chicago-based Gordon & Glickson LLC, says the illegal distribution of material has become more complicated because of the speed and reach of the Internet. Be-

fore, people had to rely on physical distribution; now, they can turn on their computers and find songs, books or movies.

"Napster seriously compromises the recording industry's business plan," Dort says.

But it would be easier for the music and movie industries to use technology to protect copyrighted materials, rather than try to solve the problem legally, he adds. For example, DVDs and MP4s (the next generation of MP3s) have built-in features that prevent users from copying them.

The problem is that hackers have figured out how to break security codes on DVDs, with help from a Middle Island, N.Y.-based Web site named 2600: The Hacker Quarterly. In August, however, a federal judge ordered 2600 to stop posting or linking to the soft-

ware program that decrypts DVD player software and allows copying of movies.

Jim Burger, a lawyer at Dow, Lohnes & Albertson PLLC in Washington, says he agrees that the problem has to do with the motion picture and music industries' difficulty in adjusting to technological changes.

"Why is this going on? It's not like all of a sudden 20 million people want to steal," he says. "The old media are having a hard time struggling with a new distribution system."

Burger says he doesn't think sites like Napster or 2600 would be nearly as successful if consumers thought they were taking money from artists rather than the all-powerful record and movie companies.

After the appeals have been settled in the Napster case, the site will probably have to shut down, Burger predicts.

"The consumer is losing out, because this is a new and exciting way to get music and to get cheaper and better music, and the music industry [isn't] willing to participate in this," Burger says.

Survival of the Fittest

Eric S. Raymond, co-founder and technical director of Chester County InterLink, a nonprofit organization chartered to provide free Internet access to residents of Chester County, Pa., says he thinks artists have the right to control the distribution of their work.

"There's exploitation and greed on both sides of this dispute — both the record companies and the Napster crowd are ripping off the artist. I'm on the side of the artist," he says.

Raymond says he doesn't think the government should prohibit technological growth, because the music industry can't keep up with quickly changing technology.

"The market tends to squeeze out inefficiencies — and in an internetworked world, physical distribution of music is a big, silly inefficiency," Raymond says. "The

record companies can either adapt to this [digital distribution of music] or die. My bet is they'll die."

Chad Boyda, who runs a site called Napigator.com, which helps users find music-sharing servers like Napster, says many people use Napster for legitimate purposes, like sharing noncopyrighted files. The site shouldn't be held responsible for people who use it for illegal purposes, he says.

"The average user does not want to go out and steal, but if you're not making the technology available, people will get the music elsewhere," he says.

There are companies that legally distribute free copyrighted music. EverAd Inc. in New York provides its users with free music that's licensed from music labels, explains Doug Millis, the company's vice president of marketing.

To pay for the license and keep the digital music free, EverAd embeds advertising in its programs.

EverAd plans to distribute electronic books sometime around December and currently distributes free music, games and software. Its technology prevents users from being able to burn CDs or copy music to MP3, Millis says. ▶

Holohan is a former Computerworld intern.

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JOE AUER/DRIVING THE DEAL

A strategy for the right service levels

SERVICE LEVELS ARE an important part of any results-oriented contract where specific vendor performance is required — and where it must be measured. Service levels are especially important in outsourcing and telecommunications deals in which the customer becomes vulnerable because he depends on the supplier. A results-oriented contract with meaningful service levels and remedies is an effective mechanism to help customers actually get what they're paying for and minimize exploitation by opportunistic vendors.

Establishing realistic service levels and remedies for vendor nonperformance can be very difficult. With some pressure from a prospective customer, vendors are generally willing to contract for service levels and, sometimes, remedies to go along with them. But vendors usually try to make service levels as broad and as loose as possible, which makes them easier to achieve — and

tougher to measure. Meanwhile, customers want service levels to be as tight as possible to ensure maximum and measurable performance. The challenge manifests itself during contract negotiations.

As a customer, remember that the vendor is always trying to minimize its risk by placing as much of the burden of proof on your shoulders as possible. Here's a recent example:

During negotiations for a global telecom deal, a customer was faced with the service-level challenge. Several prospective vendors proposed their standard service levels. The customer believed those levels were too broad for some critical components of its network. The vendors stuck to their

standard rhetoric, stating that their service levels were reasonable and consistent with industry practice.

The customer didn't fold and argued that while the levels may be consistent with industry practice, they weren't sufficient for the company and some parts of its network.

The customer's procurement team focused the prospective vendors' discussions and proposed solutions on the actual network. The team presented its network map and pointed out there were certain locations that were critical to operations. The vendor-proposed service levels weren't adequate for these critical locations because they left the customer vulnerable to too much downtime in the event of a

network failure. (But the proposed service levels were acceptable for some other noncritical locations.)

The customer then stressed the need for location-specific service levels to guarantee the robustness and serviceability of its network as well as the continuity of operations. This argument seemed to be new to the vendors and was met with some initial skepticism.

The customer pulled an ace out of its sleeve by saying, "This is a way to distinguish yourself from your competitors. It's an opportunity to excel and gain an edge. It's an opportunity to win a global deal without assuming an inordinate amount of risk. We're willing to accept your standard offering for most locations if you give us a display of confidence in your ability to perform for the critical ones. These locations are critical for us, and we need to more fairly allocate the risk of network failure."

So far, two suppliers have agreed and are proposing

JOE AUER is president of International Computer Negotiations Inc. (*www.dobetterdeals.com*), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High-Tech Acquisition Professionals. Contact him at joea@dobetterdeals.com.

their best location-based service levels. That's just what the customer needs to be competitive and maintain some negotiating power.

Isn't that what it's all about? Suppliers with real confidence that they can do the job shouldn't be afraid of performance guarantees.

What's more, having supplier competition on service levels helps both the evaluation and negotiations processes for the customer.

The difficult task ahead is actually agreeing on the specific metrics that ensure that all three critical service-level components — time, money and quality — exist and are meaningful. In other words, every performance factor must be measurable, including how long it will take, what the maximum cost is and how acceptable (to the customer) quality will be verified.

The presence of competition and the global size of the deal were effective forces in getting the customer this far, and so far, so good. Watch for an update. ▶

BRIEFS

Survey: Net Embraced By Younger Users

The Pew Internet & American Life Project, a Washington-based research organization that monitors the impact of the Internet on society, last week released survey results showing that half of the adults in the U.S. don't have Internet access, and that 57% of those nonusers have no interest in going online. Another 25% of the nonusers said they probably won't get connected to the Internet. On the other hand, the organization noted, a "substantial majority" of under-30 survey respondents who don't

use the Internet now said they expect to do so in the future. That suggests that Internet penetration will eventually reach levels similar to those of telephones and televisions, although it could take "an extended period of time, perhaps . . . a generation" to reach that point, according to Pew.

Pratt & Whitney Launches Exchange

SpaceWorks Inc. in Rockville, Md., announced that $24 billion aircraft engine manufacturer Pratt & Whitney in East Hartford, Conn., has licensed SpaceWorks' Order Manager and other software to trade electronically with its corporate customers. Pratt & Whitney customers will have access via the Internet to

the engine manufacturer's catalog of products and services. Customers will also be able to place and track orders and schedule shipments over the Internet.

Industry Faces E-Book Piracy Threat

The nascent electronic-book industry is already under the threat of piracy as customers share electronic book files, according to a Microsoft Corp. executive speaking at the Electronic Book 2000 conference in Washington last week. Electronic books account for about only 1% of the $20 billion U.S. publishing market, but that number could grow if large-scale Napster-like exchanges develop for books as well as music, said Dick Brass, vice president of

technology development at Microsoft, which has a history of vigorously fighting the illegal copying of software and other materials.

Retail Not Quite Ready for Holidays

After last year's turbulent online holiday shopping season, retailers are battening down their hatches to weather the storm they expect this year, according to a survey conducted by analysts at Cleveland-based LakeWest Group Ltd. The survey, released last week, showed that retailers are merging online and traditional sales channels. But of the 164 retailers surveyed, only 25% have consistent prices between their Web and brick-and-mortar stores, only 9% let customers pick up an online

order at a physical store and fewer than 4% allow customers to verify in-store inventories online.

Report Forecasts E-Commerce Growth

A new report released by Cambridge, Mass.-based Forrester Research Inc. predicts that e-commerce will account for 8.6% of all worldwide sales of goods and services by 2004 in the 12 countries that currently account for 85% of all online sales. The report forecasts that the U.S. online market will reach $3.2 trillion, while infrastructure deficiencies will limit the combined total of the Middle East, Eastern Europe and Africa to $68.6 billion and Latin America to $82 billion in 2004.
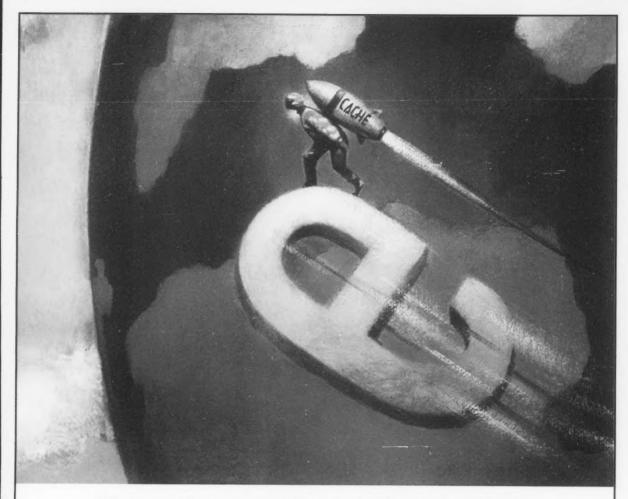
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TECHNOLOGY

MICROSOFT'S SPECIALTY TOOL

The market for Microsoft's Handheld PC might not be broad, but the fact that it has a real keyboard and more memory with Windows functionality is helping the product attract specific users such as visiting nurses and grocery store clerks. ▶ **66**

MERGING DATA STANDARDS

Two rival camps of database and data-warehousing software vendors say they plan to join forces to work on a unified set of specifications for metadata users to rely on as they navigate data warehouses. ▶ **68**

TALKING PDAs

A cell phone add-on just released for Handspring's personal digital assistants tests the boundary between voice and data communications. But analysts wonder if the VisorPhone will have appeal beyond technophiles. ▶ **69**

HANDS ON

Sun's StarOffice is a worthy alternative to Microsoft's Office 2000 productivity suite, says *Computerworld* reviewer Howard Millman, and you can also get it for Unix and Linux. ▶ **72**

FUTURE WATCH

Holography's most intriguing applications are decades into the future — researchers say the field is where TV was in 1926. But some are on the way out of the labs and into our lives. ▶ **74**

B2B: IT'S NOT ABOUT TRUST

Securing networks in a business-to-business partnership has nothing to do with trust. Companies need good policies, procedures and working relationships to prevent hacks and weather the occasional breach. ▶ **76**

THE HOLE TRUTH
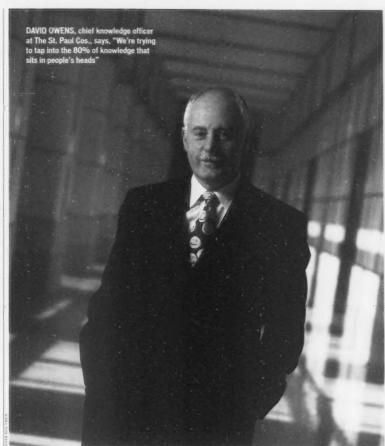
Computer researcher Dave Dittrich told attendees at the annual Usenix Security Conference that IT managers are still ignoring the root cause of distributed denial-of-service attacks: operating systems and software designed for ease of use instead of security. ▶ **78**

QUICKSTUDY

Bandwidth refers to the transmission capacity of an electronic communications line, such as a dial-up phone that connects an individual PC to the Net through a service provider. It's a measure of communications capacity — and more is usually better. ▶ **80**

EMERGING COMPANIES

E-commerce content distributor epicRealm uses prioritization and intelligent-caching techniques over its global network to speed e-commerce sites. The start-up says it can deliver dynamic data faster than its competitors, which focus on streaming media. ▶ **82**

DAVID OWENS, chief knowledge officer at The St. Paul Cos., says, "We're trying to tap into the 80% of knowledge that sits in people's heads"

TAKING CARE OF KNOWLEDGE

MORE AND MORE COMPANIES are making it a priority to refine the flow of skills and experience among employees to save the resources workers waste when they have to learn for themselves what their colleagues already know. To accomplish that, companies are creating the role of chief knowledge officer, who's charged with protecting and fostering intellectual capital.

84

BRIEFS

Legato Rolls Out NetWorker Update

Legato Systems Inc. in Mountain View, Calif., has launched a new version of NetWorker, its data-protection software. Aimed at online businesses and service providers, NetWorker 6.0 will support network-attached-storage server back-up and restoration to local or remotely attached tape libraries. It supports Linux, Windows NT, Windows 2000, NetWare and Unix. Pricing begins at $1,150.
www.legato.com

Motorola to Launch Bluetooth Phone

Motorola Inc. in Schaumburg, Ill., announced a Bluetooth-capable phone, the Timeport 270, last week. The phone is set for release late this year. Geared mainly toward consumers, it will work in conjunction with the Bluetooth Smart Module accessory and the Bluetooth PC card for wireless networking and synchronization. Pricing wasn't announced.

StorageTek Adds Tape Library to L Series

Storage Technology Corp. in Louisville, Colo., has rolled out the L20 tape library, the latest addition to its L Series tape libraries. The L20 holds up to 2.2 terabytes of data and uses digital linear tape (DLT), SuperDLT and LTO Ultrium technology drives. It supports Windows NT, NetWare, Linux and Unix. It will be sold through channel partners. Pricing is based on the configuration.
www.storagetek.com

Genuity Offers New Network Services

Genuity Inc. in Burlington, Mass., has announced Black Rocket, a network services platform for developing e-business applications, including preprovisioned Internet access, hosting, security and transport. The service includes a guarantee of installation within 10 business days to help large and medium-size companies reduce application setup time. Pricing wasn't released.

Microsoft's Handheld PC Fills Niche Role

New H/PC 2000 version isn't expected to have mass appeal, say analysts

BY MATT HAMBLEN

THE MARKET for Microsoft Corp.'s Handheld PC (H/PC) might not be broad, but the fact that it has a real keyboard and more memory with Windows functionality is helping the product attract specific types of users such as visiting nurses and grocery store clerks.

Such users have said that they would rather rely upon the keyboard of these clamshell and light laptop-type devices supported by the Windows CE operating system than on a less-powerful handheld computer with touch screen or small keys. And, compared with larger laptops, users say, they prefer the instant-on feature, light weight and lower price tag of Windows CE devices.

"With Windows CE, the keyboard is large enough to use, and therefore, there is much more typing that clinicians are able to do. They wouldn't be happy with a little keyboard with chicklet-sized keys" like some handhelds provide, said Debbie Yunk, a clinical systems coordinator and registered nurse at Swedish American Home Health Care in Rockford, Ill.

Yunk said she welcomed Microsoft's Sept. 7 announcement of the Handheld PC 2000, which will run on the same Windows CE 3.0 operating system as the smaller Pocket PC devices the manufacturer introduced this past spring.

There will be two form factors for the new devices, offered by several vendors: clamshells with screens half the size of a desktop PC's, and tablet versions with nearly full-size screens. Both will have nearly full-size keyboards and Windows functionality and will support wireless functions. Prices will start at about $1,000; the new Hewlett-Packard Co. Jornada 720 is priced at $999.

About 55 nurses and therapists at Swedish American have been using Windows CE 2.0 running on Tokyo-based NEC Corp.'s MobilePro 780 clamshells for approximately 18 months.

Battery Life and Death

The NEC equipment probably won't be replaced right away with H/PC 2000s, but Yunk said she's glad that wireless functionality will be added along with the use of a cell phone and that battery life will be extended. Currently, she said, clinicians may have to plug in the MobilePro at a patient's home to make it through an eight- to 10-hour day — something that could be avoided with battery life of as much as 15 hours, as promised with the latest version.

Clinicians presently download and upload a day's worth of patient charts via a dial-up connection, which could be sped up "if we decided a wireless network was something we could afford," Yunk said.

Full-size laptops would be far less attractive than the NEC devices because they would be double the 2-lb. weight of the Mobile Pro and possibly double the price of the $900 unit. Also, laptops need a long boot-up time, while NEC machines are instant-on, Yunk said.

Swedish American's patient-care software was created and is updated periodically by Patient Care Technologies Inc. in Atlanta, a mobile computing integrator for 400 home health care companies nationwide.

Patient Care has used Windows CE on larger devices than those from Santa Clara, Calif.-based Palm Inc. "because serious data collection on patients is needed, and Palm devices don't have the processor size, memory or screen size for industrial management applications," said Mark Braunstein, president of Patient Care.

Also, new federal requirements for patient privacy make it "particularly important" that Microsoft has installed a special chip, CryptoAPI, inside H/PC 2000 machines to allow users to install their choice of encryption technology, he said.

At Town & Country Markets Inc. in Seattle, a pilot program involving some type of H/PC 2000 machine will begin later this month at the Shoreline Central Market, said Tim Clifford, director of information systems.

The specific hardware hasn't been chosen, but it will feature a plug-in to allow voice over IP communications in the grocery store, he said. For example, a food buyer "could quickly talk to a department head about setting up a special display," Clifford said.

Open for Integration

Town & Country is only able to use its handhelds from Cincinnati-based Telxon Corp. with an ordering system connected to one wholesaler, Associated Grocers Inc. But the new Windows CE machine will have the processing ability to combine Seattle-based Associated Grocers' orders with orders for specialized food wholesalers, Clifford said.

"We will avoid the entire step of converting paper to computers for some wholesalers," he said. And because the Windows CE platform is based on open standards, Town & Country expects to integrate some of its specialized applications, Clifford said.

Analysts said that the H/PC 2000 clearly seems headed for specialized markets, not for consumers or general office workers, among whom it has failed to catch on. ▶

SWEDISH AMERICAN Home Health Care's Debbie Yunk says wireless technology with larger keyboards and a long battery life works best for clinicians

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TECHNOLOGY

Opposing Groups Merge to Develop Metadata Standard

BY DAN VERTON

Two opposing camps of database and data warehousing software vendors last week ended a five-year rivalry, deciding to combine forces in search of a single metadata standard aimed at creating a plug-and-play environment for users who are building data warehouses.

In a joint announcement, the Meta Data Coalition (MDC) in Austin, Texas, and the Object Management Group Inc. (OMG) in Needham, Mass., said the two organizations would merge to work on a combined set of specifications for metadata interoperability among different data warehousing tools.

Until now, the two industry groups have supported competing standards for metadata, which functions as a card catalog for warehoused data. The merger signals an end to a political tug-of-war between the Microsoft Corp.-affiliated MDC and the OMG metadata effort, which has been backed by vendors such as Oracle Corp. and IBM.

The two groups plan to merge the features of the OMG's recently ratified Common Warehouse Metamodel standard with the MDC's Open Information Model standard, emerging with a single standard within six to 12 months.

The resulting specifications should allow companies that run data warehouses to exchange metadata among products developed by different software vendors, improving interoperability.

Surprising Step Forward

Michael Schiff, director of data warehousing strategies at research firm Current Analysis Inc., said the announcement is a significant step forward for data warehouse developers but added that he was surprised by the timing. "I expected this to occur, just not in my lifetime," he said.

Microsoft's Thomas Bergstraesser, a product unit manager for SQL Server, said the issue of MDC vs. OMG isn't really a question of Microsoft vs. Oracle. "If you look at the two specifications, they are very similar," he said.

"If you get one standard that the industry supports, it stands a better chance of being implemented," said Schiff.

Archie Dayton, a technical project specialist at Coca-Cola Enterprises Inc., a bottling company in Atlanta, said his company uses products from Oracle, NCR Corp. and Microsoft, and having two different standards makes it harder to integrate them.

"There should be strong support for this. Metadata is an important starting point for integrating business data," said Dayton, adding that it is a key aspect to all e-business transactions. "You start with metadata, and you go from there." ▶

TECHNOLOGY

Handspring Launches Combined PDA, Cell Phone

Analysts wonder if device will have appeal beyond technophiles

BY MATHEW SCHWARTZ

IF THE PERSON seated next to you on the bus tomorrow morning starts carrying on a conversation with his personal digital assistant (PDA), don't panic — he might be talking on a cell phone. Last week, Handspring Inc. in Mountain View, Calif., released VisorPhone, a cellular phone that plugs into its Visor PDAs.

Visors are Palm-compatible PDAs that offer two features that Santa Clara, Calif.-based Palm Inc.'s handhelds don't: a built-in microphone and a Springboard port in the back into which users can plug modules to enhance the device's functionality. The VisorPhone ($299 including activation fee) along with cellular service plans is available only through Handspring's Web site (www.handspring.com).

This isn't the first attempt to merge cellular phones with personal organizers. Last year, Qualcomm Inc. in San Diego released the pdQ, a cell phone fused with a Palm III handheld organizer. But its $799 price tag and bulky size may have deterred all but the hardiest early adopters.

Manageable Size

"[The pdQ] tries to graft a PDA into the form factor of a phone, which makes it inconvenient to use for either purpose," said Chris Fletcher, an analyst at Boston-based Aberdeen Group Inc.

By contrast, the VisorPhone is 2.4 by 2 by 0.6 in. and weighs 2.9 oz. with a standard battery. That gives the VisorPhone an overall size that, while bigger than most cell phones, is still manageable. Users can talk into the VisorPhone or use its combination headset and microphone. While talking on the VisorPhone, users can also continue to use its other functions, for instance, to create new appointments or write notes.

Though there have been a variety of devices for Palms and Visors that enhance functionality, such as digital cameras, backup modules and modems, each new version of the PDAs has maintained the basic functionality of an organizer.

"To me, this kind of combination — adding a voice module that allows me to make voice calls with software that allows me to do a lot of interesting things — looks like a logical extension" to the relative PDA simplicity, said Mark McGuire, an analyst at Stamford, Conn.-based Gartner Group Inc.

Big Screen Real Estate

Besides having the basic features of many of today's cell phones — variable rings, silent vibrating ring, a record of all calls made — the VisorPhone's biggest benefits may be its software and its 160 by 160 pixels of screen real estate, a whopping amount for any cell phone. The software takes full advantage of the larger screen size, allowing users to conquer tasks that are difficult on normal cell phones, such as setting up a conference call or short-messaging service message (SMS). SMS allows text messages of up to 160 characters in length to be sent to either an e-mail address or an SMS-enabled cell phone. Using the Visor to tap out SMS messages is considerably easier than a cell phone keypad.

Although the VisorPhone currently works only when plugged into a Visor, Handspring said it's developing a separate container for the phone to work outside of a Visor.

Initial adopters might include sales representatives, repairmen or overnight-delivery workers, according to Fletcher. With custom applications, a device such as the VisorPhone could replace "the custom-built brick that the FedEx guy carries around," he said.

But beyond the gee-whiz factor sure to attract an initial coterie of PDA geeks and new-technology freaks, analysts said the VisorPhone might remain a niche product for the short term.

"It uses the GSM band and it's cool, but [that's] going to keep it an early-adopters kind of product, which is I think exactly what [Handspring's developers] want," said McGuire.

The Global System for Mobile Communications (GSM), while common in Europe and Asia, is much less common than Code Division Multiple Access in the U.S.

"A lot of this is a test, finding out where the two kinds of key applications — voice and data — will overlap," said McGuire. ▶

Cross-Examination Sinks E-Mail Add-On

*Jude asks the right questions and uncovers
security flaws that give a vendor a failing grade*

I AM OFTEN BERATED by various people — usually my wife, my mother — and now, by some of *Computerworld*'s readers. For the latter group, the issue is my lack of technical expertise. I continue to maintain that I don't need that much technical knowledge. Usually a little bit of common sense and a willingness to ask stupid questions serves just as well in my job.

To give you an idea of my level of technical knowledge, I can't program at all, in any language. I know what TCP/IP does but am a bit hazy on the differences among bridges, hubs and routers. I can never remember whether Unix uses "/" or "\."

So when I'm asked to check the security of a new product to give personal digital assistants (PDA) and Wireless Application Protocol (WAP) phones access to our Microsoft Exchange mail servers, you'd be excused for thinking that I'm the wrong man for the job. I know next to nothing about WAP, and I even have problems figuring out most of the functions on my own PDA.

Despite my ignorance, I can identify three major security flaws in the product in about 10 minutes flat. When I question the vendor about these issues, it seems to take it a week to find anyone who can understand my questions, let alone give relevant answers.

I haven't yet worked out whether that means that I'm more technical than I think I am or that there's a startling lack of knowledge in the industry about anything that has to do with security.

Asking the Right Questions

The vendor — I've decided to keep it anonymous, since my point isn't to single out one company for criticism — strikes me as being in a rush to take advantage of the latest fad. When I question some of its design decisions, the most common reason given is "because it was easier that way."

For users at my company to get access to their Exchange e-mail from their PDAs, they first have to log in to our network. We've got that secured quite well. Then they have to log in to the vendor's server product — call it Server X. This server retrieves their mailboxes from Microsoft Exchange, performs a simple bit of conversion and displays it back to their PDAs in a format the device can understand.

My first question was about how you log in to Server X. Of course, Server X uses its own user identification and password — yet another one for users to remember. To check if you're the right user, it compares the password you supply when you log in with the password you originally set for your account. If they're the same, you're in. This is all relatively standard.

Of course, to be able to compare the two passwords against each other, the system has to be able to store the original password.

Storing a list of passwords is a dangerous thing: Any attacker who can get at the list can then impersonate any other user. So it encrypts the passwords using an algorithm known as a one-way function, then hides the password file. Almost every password-based system uses a close variation on this method.

However, the actual method the vendor uses to encrypt and hide the passwords is a new variant to me. It uses the crypt(3) algorithm, which has been in use since 1975 and should long since have been put out to pasture.

A stranger decision is the place the vendor chose to hide the encrypted passwords. It may sound odd, but you do need to hide passwords even after they have been encrypted.

Even one-way encrypted passwords can be attacked, so hiding them makes an attacker's life that much more difficult. The Server X vendor chose to store its encrypted passwords in what the vendor's representatives describe as a "hidden" custom attribute in Microsoft Exchange.

Microsoft has allowed for 15 custom attributes, but the designers of the dialog box provided enough space to display only 10 attributes.

One might assume that the other five are hidden. However, you can choose which 10 attributes to display. And Microsoft even provides functionality in Exchange to display any 10 of the 15 attributes by default. So they're not exactly hidden.

Stranger yet is the means by which a mailbox is retrieved from Exchange. Rather than use the individual's Exchange accounts to retrieve his mail, the system uses a single, generic Exchange account referred to as a "courier account."

The vendor even recommends that, for simplicity's sake, this courier account be given unlimited access to all Exchange mailboxes.

Security Implications

The implications of using one account are wide-reaching. Not only does it give attackers yet another powerful target account that could be used to compromise the entire e-mail system, but it also defeats Exchange's granular access control and makes a mockery of its logging capabilities.

I can allow certain people access to my folders in Exchange so that they can read some, but not all, of my mail; these privileges are stored with their user IDs. If they're accessing Exchange via this generic courier account, this whole privilege-granting process is completely bypassed.

As for logging, any significant action that I perform on an Exchange server is logged. The logs store details of the action along with the date, time and my user ID. If I do something foolish, we can use the logs to trace the action back to me. But if I'm accessing Exchange through Server X, then its courier account will show up as being responsible for the action, not me.

These weaknesses actually go well beyond just compromising the security of Server X because they actually damage the security of the Exchange server as well.

We can only hope that the vendor will fix some of these weaknesses in the next release of the product.

Whenever someone takes me to task for not being technical enough, I smile. At the moment, I know much more than I need to in order to defeat these systems.

The point I'm trying to make is that security is more about an attitude than any particular skill set. I overheard one of our engineers asking about a new piece of software the other day. She started off by asking some quite basic questions, completely unafraid of displaying her ignorance about the product. But she kept asking questions until she understood what the software did and how it did it, and she kept trying to work out the consequences of various potential system failures.

Although she does have detailed technical knowledge in her particular specialty, that confident ability to ask stupid questions and think through the answers will always be much more useful to me than her specialist knowledge.

I look forward to the day when vendors develop systems that are good enough to make me need more technical knowledge. ◗

Security Manager's Journal

THIS WEEK'S GLOSSARY

WAP: Wireless Application Protocol is a set of specifications, developed by Wireless Application Protocol Forum Ltd. in Mountain View, Calif., that lets developers using Wireless Markup Language build networked applications designed for handheld wireless devices. WAP 1.1 is a de facto standard, with support from more than 200 vendors, but security managers have concerns because a wireless transmission is vulnerable to an attack at the WAP gateway server.

crypt(3): This Unix function for password encryption is based on the Data Encryption Standard algorithm. Considered older technology, it uses a 56-bit key, which generally isn't considered adequate by today's security standards.

LINKS:

Here are two links to cryptography resources that Jude is researching for his ongoing smart-card project:

http://attila.stevens-tech.edu/ ~khockenb/crypt3.html: This is a good paper detailing cryptography's shortcomings.

www.dataguard.no/bugtraq/ 1995_2/0142.html: Offers a clear description by Steve Bellovin of the rationale behind cryptography.

A Star Shines In the Office

Can a Unix-based business suite find happiness in a Windows world? Most things you get for free are worth exactly what you pay for them, but StarOffice 5.2 from Sun is reliable, powerful and free – a rare combination. By Howard Millman

STAROFFICE'S BROAD array of tightly integrated applications delivers every important productivity feature you would expect to find in an enterprise-class office suite that competes with Microsoft Corp.'s Office 2000 and Ottawa-based Corel Corp.'s WordPerfect Office 2000. The new package from Sun Microsystems Inc. also has two features you seldom see — freedom from licensing fees and true Windows/Unix cross-platform compatibility.

You can tailor the suite's look and feel while its running under Linux, OS/2 or the Unix X Window System to closely match the look and feel of Windows 95, 98, NT or 2000. This continuity will help users who use different operating systems when traveling.

StarOffice 5.2's collaborative computing features — called Schedule, Discussion and Mail — include support for Santa Clara, Calif.-based Palm Inc.'s Palm OS. They should be useful in promoting communication among colleagues who work across the hall, across town or across the globe. I liked the way Schedule handled task management and event planning. Its convenient e-mail reminders simplify scheduling.

Despite its extensive array of features, the suite's customizable, well-designed menus, dialog boxes and tool tips help simplify navigation. For example, a pop-out, multiview navigator offers one-click access to four varieties of exploring tools, letting you organize files and folders by project, task or hierarchy. Two features I miss — and the main reason I still prefer WordPerfect — are reveal codes and in-context font preview. But even without reveal codes, it was easier to correct formatting problems in StarOffice than in Microsoft Word.

StarOffice's extensive integration, however, can be a disadvantage. It takes noticeably longer to start up, about 10 seconds, because it loads almost a dozen applications. By contrast, Word and WordPerfect load their primary modules (such as Word and Excel) separately, as called for. Once StarOffice is loaded, however, switching between its modules takes only a second or two.

Leveraging the suite's cross-platform interoperability, StarOffice's import and export filters let you exchange files smoothly with other office suites. I transferred files from StarOffice to both Word 2000 and WordPerfect 8, but not WordPerfect 9 or WordPerfect 2000 — that filter is due early next year.

Occasionally, some minor tweaking was needed, for example, to fix sub-8-point fonts in tables. Revision tracking, which can often muddle file exchanges between Word and WordPerfect, worked well.

StarOffice uses a platform-independent file format, so documents created on the Linux edition are transferred accurately and intact to the Solaris or Windows versions. Early next year, Sun plans to release StarPortal, a browser-based tool that will integrate with StarOffice to provide network-centric services.

Platform-independent StarPortal will let users view documents on Wireless Application Protocol-enabled cell phones, personal digital assistants and two-way pagers.

Package Peek

All tasks begin in StarOffice's Desktop, a control center that replaces Windows' desktop by default. You can reverse that, but you might like the new look. I found StarOffice's Desktop as good a launchpad as Windows, and even better, it lets you organize files and folders and open or create documents, projects and e-mail.

StarOffice Writer, the word processor, creates documents from simple memos to complex, multimedia-enabled brochures. An array of specialized tools, such as AutoPilot (an interactive document-handling macro that's Sun's version of a wizard) and AutoFunction (real-time spelling, error-correcting and auto-completion agents), help you by jogging your creativity and anticipating your needs.

StarOffice Calc, the spreadsheet program, will be familiar to users of Quattro Pro, Microsoft Excel or Lotus 1-2-3 to get up to speed quickly. Among Calc's functions are data analysis capabilities, multidimensional data views and creating what-if scenarios.

StarOffice Impress creates portable, eye-catching, interactive two-dimensional and 3-D presentations. It includes vector graphics and special-effects tools for organizing, illustrating and delivering your message.

This package is an unbeatable value: free, or $40 on CD with a users guide and without a 70MB download. Sun's recent decision to release the source code will let value-added resellers and developers add custom features.

As with any one-size-fits-all software package, however, StarOffice's sweeping array of powerful applications may be overkill. While I recommend it for use in multinational enterprises, especially those with multiple computing platforms, its loading delay may annoy some users. Sun says it may unbundle the suite's primary applications. That would further enhance StarOffice's appeal. ▶

Millman is a consultant and freelance writer in Croton, N.Y.

STAROFFICE'S "START" BAR (bottom), menus and tool bars are fully reconfigurable and closely resemble Windows in appearance and behavior, helping to maintain the suite's look and feel across multiple operating platforms. The four-tab, pop-out navigation panel (left) accelerates switching between modules and open tasks

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Virtually There

Holography's most intriguing applications are decades in the future, but some are on the way out of the labs and into our lives. By Barbara Forster

IMAGINE sitting in your office or at home and suddenly seeing the wall in front of you disappear. Behind it is another office with people at a table, and you're at the table. Or the scene that materializes is another living room on a different continent, and you're there visiting with friends and family

The technology behind these intriguing, if somewhat eerie, scenes is holographic videoconferencing, for which a working prototype already exists at MIT. In-office/in-home use is at least 10 years down the road, however, according to Stephen Benton, head of MIT's Spatial Imaging Group at the Media Laboratory.

"In the last few years, our research has brought us to the point where television was in 1926," Benton says. "Our main job is to show that we can do it. Ten years ago, people thought we were crazy."

But the researchers can now show some convincing, if not quite tangible, proof that they aren't crazy. And you won't have to wait a couple of decades before the first manifestations of the technology move out of the laboratories and into the real world.

Thanks to fiber-optic technology, for example, holographic data storage is becoming a practical reality.

"We can store 100,000 different photos or digital pages — that's a terabyte [of information] — in something the size of a sugar cube," says Benton.

Fiber optics can easily handle the wide bandwidth that holograms require because the signals are much wider than those used for television. And even better, the newer technology transmits information more rapidly.

Various industrial applications are being used to take advantage of holographic technology for quality control in manufacturing and testing for fractures, such as holographic nondestructive testing. The flexibility of the technology makes other industrial design applications inevitable.

Holograms or "heads-up" displays are used in military and civilian aircraft. Holograms give pilots critical information as they look through their cockpit windows.

The technology has found a home in the less-technological world, too. In an effort to convey images and messages not possible with traditional media, artists "explore" 3-D space and pure light via holography.

But medical professionals are the most likely early users of improved holograms. Today's X-raying methods of Magnetic Resonance Imaging and CAT-scan cameras gather 3-D data, but holography offers a way to examine those images in a full 3-D format. Parallax, available only with holograms, allows viewers to manipulate the image and see different perspectives as if the object were actually there. The bonus is that because the complex images will be more vivid, they will be more accurately interpretable by physicians.

Improving the technology that produces holograms is only half of the equation. You need to be able to view them, so work on display media and devices such as holovideo is keeping pace with evolving holographic technology. Benton already has two working prototypes of a real-time imaging system that can render and display computer-generated holograms at video rates. In designing the electronic video display, researchers have established the principles of information reduction and image scanning. Scaling up to practical display sizes still poses significant electronic and electro-optical challenges. So far, the parallelization of the computation, storage and display is feasible for 3-by-5-in. images.

Several groups around the world are focused on using LCD screen technology. One group in England is working to shorten the transmission time needed for holographic images.

"Another group is working on images you can feel," according to Benton. "You use a pointer-like tool on the image and it 'feels' like you're pushing it. Eventually, the images should be able to talk, too."

The next major breakthrough in optical devices is imminent, says Benton. "Between 1926 and 1936, television went from mechanical technology to electronic, and that's next for holography," he says.

Researchers are betting that the electronic key to practical holographic devices rests with Micro Electro Mechanical Systems (MEMS), the integration of mechanical elements, sensors, actuators and electronics on a common silicon substrate. The realization of complete systems-on-a-chip is the result of the combination of silicon-based microelectronics and micromachining technology.

With MEMS, the cost of producing optical devices will drop. "The first prototype was a big chunk of a million dollars," says Benton. "The first [more reasonable] ones will be about $100,000 and work their way down" in price.

But don't expect to see Star Wars-like holograms, the ones that seem to float in space, soon. "Those have a serious problem with physics," says Benton.

On the other hand, don't be surprised if five years from now holographic technology is no longer just a curiosity and has made real inroads into practical life. ▶

Forster is a freelance writer in Boston.

Holographic Technology: Real-Time Display, Tactile Interface

The Holovideo Project at MIT's Spatial Imaging Group at the Media Laboratory is developing a real-time imaging system that can render and display computer-generated holograms at near-video rates. The Mark-II display diagram (at right) provides 150-by-75-by-150mm images with a 360-degree view zone at rates of approximately 2.5 frame/sec. Two 18-channel acousto-optic modulators (AOM) (1) are used, with each channel of a single AOM modulating beam of red light in parallel. Those beams are then directed to a (2) vertical scanner that produces an image with video resolution in the vertical direction and holographic resolution in the horizontal direction. The image passes through a (3) beam splitter, and each of the two portions is directed to (4) three of six tiled horizontal scanners, and then on to the (5) output lens and to the (6) vertical diffusing screen for viewing.

MIT RESEARCHERS have developed a tactile feedback interface (shown above) for the holographic images they produce

4 Six tiled horizontal scanners

3 50:50 beam splitter

2 Vertical scanner

5 330mm diameter 250mm focal-length output lens

1 Cross-fired 18-channel acousto-optic modulators

6 Vertical diffusing screen

When it comes to securing your business-to-business site, don't skimp on security just because you trust someone.
By Mathew Schwartz

I T'S 9 A.M. Do you know where your business partners are? Perhaps one is logging in to your secure business-to-business Web site and ordering $2 million worth of widgets. Then again, someone at that same partner company could be exploiting a hole in your Java server that you haven't had time to fix, gaining root access and running direct SQL queries on your pricing database.

It's 9:30 a.m., and someone from that trusted, valuable partner firm just discovered that you sell to its direct competitor for 20% less per item. And unless you do some quick price matching, it's going to find a new supplier.

Call it the New Economy paradox: you partner with a company, allow your computers to communicate via secure connections and open exclusive marketplaces to trade new or excess inventory, all to save time and money.

But at the same time, in a different market, that partner is also a competitor. The result is that you've opened your systems to an organization that's trying to put you out of business.

Of course, overly curious business partners aren't the only threat when translating business-to-business partnerships into real-world network and computer connections — there are always hackers and competitors. So when creating partnerships, security experts recommend taking a line from the poet Robert Frost — "Good fences make good neighbors." Partners should agree on thorough security policies and watch everything.

Trust No Partner

Business-to-business security models are only as secure as the weakest link. An attacker doesn't have to break into your network. He can break into a partner's and then use the secure connection to launch a devastating attack on your site. So experts caution that trusted business partners shouldn't be trusted security partners — in fact, there's no such thing.

"There's no one outside your organization that you should be trusting," says John Lucich, international president of the High-Tech Crime Network, a West Caldwell, N.J.-based computerized network of law enforcement agencies from 15 countries. Treat partners as if they were hostile, he says — because they might unintentionally let hackers attack you.

"It's not that you can't trust him or her individually," says Lucich. "You can't trust what they're doing about their network security or who works for them."

Given the special ports to which business partners sometimes have access, it's even more important to isolate your network from theirs and fine-tune the firewall to let only what is essential through, says Lucich.

But good security starts inside your own company. "Tools enforce compliance to a security policy," says Lucich. Accordingly, companies need good and thorough security policies. Lucich recounts asking to see the security policy for a company with $400 million in annual revenue. "It was a five-page document," he says. "It should be 30 to 100 pages, depending upon what they do."

A good policy alerts the information technology department to what it can and can't do from a security standpoint. "It also alerts your employees to what is allowed and what isn't allowed," Lucich says.

For prospective business partners, examining each side's written security policies is often the first step.

"[Both companies] need to have consistent levels of access control and security so that there can be an exchange of information under a single seam of security," says Drew Williams, security segment manager at BindView Corp. in Houston, which makes IT risk-management software.

Agreeing on a security model is difficult; there is no widely accepted standard. "One of the big items that people are looking at is [British Standard 7799], a framework for security," says George Kurtz, CEO of Foundstone Inc., a security training and consulting company in Irvine, Calif.

But until a standard is available, companies are on their own. Thus, when forming partnerships, Kurtz recommends first analyzing the prospective partner's security framework and then sending in a team to make sure its security is comparable to your company's. If the security is inadequate, "put the brakes on it," says Kurtz, and don't plan on partnering anytime soon.

Companies may soon find their larger partners setting standards for them. "Visa [recently] issued 10 commandments for its business partners," says Robert Clyde, vice president of security management at Axent Technologies Inc. in Rockville, Md., which makes security software. "It's a classic B2B partnership: 'Together, we're going to create this community of trust about using Visa online; we're going to have rules everyone has to follow to ensure security online.'"

B2B SECURITY

The E-Mail Threat

E-mail is often overlooked as a security risk. "I know a leading security company that gets eavesdropped on by another leading security company because their e-mail is [not encrypted]," says Williams. Unencrypted e-mail is plain text, so messages that are intercepted are easy to read. Accordingly, many companies are using public-key infrastructure (PKI) technology to encrypt e-mail while relegat-

Good Fences, Good Neighbors

TECHNOLOGY

Visa Issues B2B Guidelines

Want to work with Visa International Inc.? The company recently released security guidelines that all Internet-enabled Visa partners must follow. In the future, more large companies could be setting such standards for their smaller partners.

1. Install and maintain a working network firewall to protect data accessible via the Internet
2. Keep security patches up-to-date
3. Encrypt stored data
4. Encrypt data sent across networks
5. Use and regularly update antivirus software
6. Restrict access to cardholder data inside the business to a "need-to-know" basis
7. Assign a unique identity to each person with computer access to data
8. Don't use vendor-supplied defaults for system passwords and other security parameters
9. Track access to data by unique identification
10. Regularly test security systems and processes

There are three additional general requirements:

11. Maintain a policy that addresses information security for employees and contractors
12. Restrict physical access to cardholder information
13. Destroy data when it's no longer needed for business reasons

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ing all business-to-business transactions and communications to virtual private networks (VPN).

They also use digital certificates to authenticate every order so they can't later be repudiated. Breaking into a VPN is extremely difficult, unless you're a home user with VPN access and are connected to the Internet. That's why experts recommend personal firewalls for laptops and home computers, so hackers can't use them to leapfrog onto a secure VPN.

Secure Sockets Layer (SSL) is another way to secure communications, notes Clyde. "You can do enabling without PKI. You can use SSL — which is just PKI under the covers — and passwords as means of authentication over an encrypted session. It's probably the most common form of security for business-to-business commerce today," he says.

SSL does have a downside. "Many [companies] are concerned because SSL only relies upon passwords," says Clyde. Instead of this one-password approach, Clyde recommends requiring a physical object to get a one-way password for each user session. That object can be a smart card or a laptop with a digital token stored on it. Using a physical object increases the difficulty level for hackers.

"It's much harder for the bad guys — they have to steal something as well as guessing something," says Clyde.

"Many hackers out there aren't going to be interested in doing physical crimes as well as hacker crimes."

From a security standpoint, don't forget the lawyers — because business-to-business exchanges are a world of legal pain just waiting to happen. If a hacker uses your site to leapfrog through secure connections into a partner's site, that partner could sue you for negligence.

"I think this will be the biggest area for lawsuits going forward — hooking up with 'trusted partners,'" says Lucich.

Contingency plans and nondisclosure agreements can also prevent a lot of aggravation. If a hacker breaks into your partner's site and starts an attack that you discover, what do you do? You contact the partner, of course, but you also need to be kept in the loop as it closes the security hole. Otherwise, your options are limited. "If you decide to take down some of the links [between B2B networks], just taking down a link because you can't get a hold of someone might stop the intrusion, but it might have business implications, too — what if that link generates millions of dollars per day?" asks Kurtz. Besides potential lost revenue, there are legal risks as well, he says.

Pandora's Box

But that begs another question: How do you know when a partner company has been broken into? This is especially important, because when business partners tie networks together, they often use ports that no security manager in his right mind would ever use without the defensive equivalent of Fort Knox in front of it first. (See "Planned Vendor Link Leaves Security Hole," Security Manager's Journal, Sept. 11.)
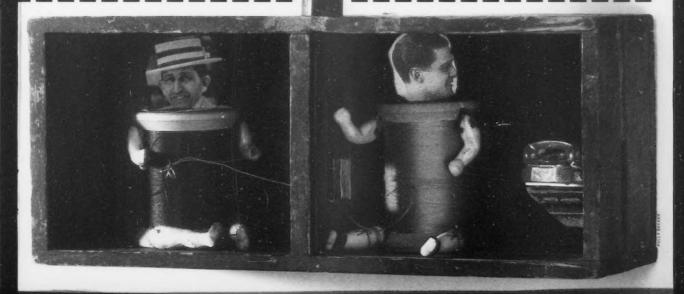
Some ports even make the top 10 security threat list from the SANS Institute in Bethesda, Md. Under "ports to disable," the SANS Institute recommends disabling the two ports most often used for business-to-business transactions — 80 and 443, which allow outside HTTP and SSL TCP access to a Web server. If a good hacker gets TCP access, you can kiss your site goodbye for a while.

Accordingly, you need to know if and when there's a security breach. "Though most partners won't let you install monitoring equipment on their premises or network, you can still use intrusion-detection systems to monitor every packet that comes at your network," says Kurtz. "If it looks like anomalous traffic is taking place, [you] need to step in quickly." Kurtz says a common attack begins with hackers trying many ports on a machine to find one that's open.

But sometimes, defenses will get breached. That's why you need to have "a good enough business relationship where you're able to identify the problem and work together," says Kurtz.

According to security expert Bruce Schneier in his recent book, *Secrets and Lies: Digital Security in a Networked World* (John Wiley, 2000), Internet security isn't about whether your systems are vulnerable; it's about how to mitigate the damage when they do get broken into. It might sound bleak, but he writes that it's just too difficult to create a 100% secure system today.

That's why good policies and procedures, good working relationships with business partners and well-configured tools can mean the difference between surviving an attack or seeing your business-to-business partnership fail. ▶

Stopping Attacks at Their Source

A DDOS security researcher says IT departments need to plug basic security holes and set policies.

By Ann Harrison

WHILE DISTRIBUTED denial-of-service (DDOS) attacks continue to generate breathless media coverage, most information technology administrators are continuing to ignore the root causes of and possible preventive measures for such attacks, argues a leading security expert.

Dave Dittrich, an IT researcher at the University of Washington in Seattle, made the critical discovery that the DDOS attacks are the work of organized groups that use known security holes to infect machines with agent programs. The DDOS agent programs give intruders the ability to remotely control the compromised machines and use them to overwhelm targeted sites with data packets.

Dittrich notes that DDOS attacks are often successful because some systems have unpatched security vulnerabilities and are easily overwhelmed by the speed and complexity of the intrusions. He adds that root kits, which attackers use to replace operating system commands and install multiple back-door Trojan horse programs, are also becoming more sophisticated.

At the same time, Dittrich says, software and operating systems are designed for ease of use instead of security, and vendors often leave open back doors that can be used for system diagnostics. He points out that with 21 million hosts being added to the Internet

each month, the target environment is becoming richer for the most recent DDOS attack tools. Assuming that it takes 3 to 6 seconds to acquire each new host, an attacker can set up a new attack network of 2,200 agents in two to four hours, says Dittrich. That's an impressive number, considering it takes only 100 to 200 attacking hosts to knock a large site completely off a network.

Firewalls and Training Needed

According to Dittrich, poorly trained network administrators and a lack of firewalls and intrusion-detection systems make it difficult to determine the source and strategy of attacks.

"Poor system network forensic tools and skills means that we have no idea who did what, when, where and how," says Dittrich.

He says most sites aren't prepared to capture the invading traffic on their networks or on subnetworks that would help them analyze packets and track attackers. He notes that sites under attack receive so many packets that it's difficult to locate the IP addresses of master machines by using overburdened logging systems. When the University of Minnesota in Minneapolis was under attack, for example, the logging system could detect only 3,000 attacking host machines.

Attackers also use the User Datagram Protocol and Internet Control Message Protocol packet protocols,

which make it hard to detect and block packets, says Dittrich. The NetFlow FlowCollector tool from San Jose-based Cisco Systems Inc. can help monitor traffic, he says, but it isn't compatible with other firms' hardware.

Improved Forensics Help

"Network forensics is really, really poor in most cases," says Dittrich. "Identification of agents is difficult because they cannot analyze packets and TCPdump [files]."

Dittrich says sites under attack can contact their upstream and backbone providers and have them locate the part of the upstream network where the packet flow is low enough to capture and analyze packets that may lead to the source of the attack.

Most sites focus on restoring service without storing vital information about how the attack happened, he says. Sites should instead dump data on a laptop for later analysis. "More people need to know how to analyze packets flowing over their [intranets] and get around things like switches," Dittrich notes.

Dittrich says Internet service providers should take care not to simply cut off an attacker's accounts, because that damages a possible trail that could be used to locate intruders.

He adds that administrators can help stop DDOS attacks by closing security holes and installing firewalls and intrusion-detection systems. Building a secondary operations network that uses serial ports instead of telnet connections to switches and routers to monitor packets can also help protect networks, he says. Implementing IPSec and IPv6 security protocols is another means of addressing the problem, as is auditing hosts for hidden DDOS tools and enforcing policies for secure hosts on networks.

In addition, Dittrich says, managers should consider installing ingress and egress filtering on networks and establishing rate-limiting strategies that can detect and block packet floods.

Dittrich says many companies claim to sell products that can guard against attacks but there is no sure thing that will keep networks safe. He notes that some vendors sell host-based tools, while others focus on network-based prevention, detection and response. But, he says, such point approaches don't work. "If you don't have anything to enforce host-based security, you are just shunting the problem off to a place where it won't be solved," he says.

Regarding long-term solutions, Dittrich supports better ways of exchanging information about DDOS attacks to match the speed of the computer underground and backs ongoing government efforts to create private data distribution partnerships.

According to Dittrich, organizations should consider purchasing insurance

to cover service disruptions, build incident response teams and hire a full-time chief hacking officer to scout for vulnerabilities and evaluate known attacks.

Dittrich says the business community must acknowledge security as a cost of doing business and vendors should hire developers who know how to write secure code. DDOS attack tools were first developed to take over Internet Relay Chat (IRC) channels, but they now intrude on critical functions such as transporting patient data in hospitals.
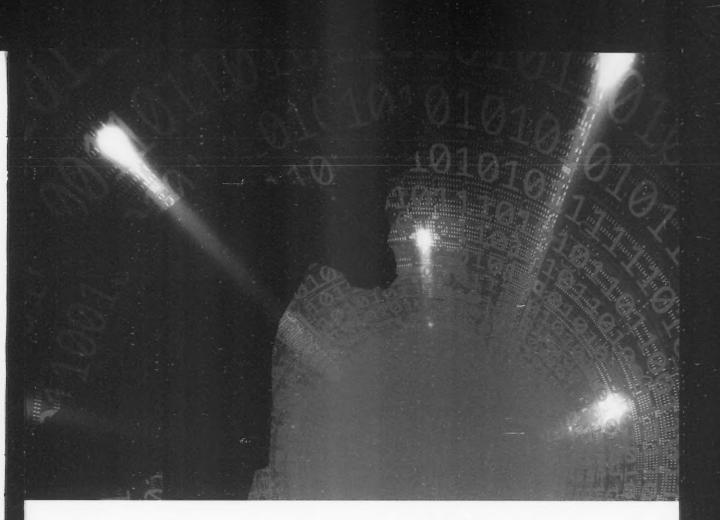
"It's time to stop pandering to user demands for services and features and start teaching them how to survive in a hostile environment," says Dittrich. "Either acknowledge that the Internet is not robust enough for critical services, or pay what it costs to make it secure. I don't want to die because some script kiddie is dissing someone on an IRC channel." ▶

How DDOS Attacks Work

In the first phase of a DDOS attack, target systems are scanned for unpatched vulnerabilities that can be attacked. The attack program is loaded onto automatic scripts and launched in waves. Dittrich says attackers often use root kit tools to conceal the installation of agents from system administrators and break into large numbers of systems to set up attack networks.

In phase two, the compromised machines are used to direct a stream of packets at targeted systems. The attacks consume bandwidth and make the systems nonresponsive. Dittrich notes that when networks are under attack, many administrators mistakenly believe that they're experiencing hardware failures. They then reboot the machines, which doesn't solve the problem. – *Ann Harrison*

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TECHNOLOGY QUICKSTUDY

HOT TRENDS & TECHNOLOGIES IN BRIEF

Bandwidth

DEFINITION

Bandwidth refers to the transmission capacity of an electronic-communications line, such as a telephone line, that connects an individual computer to the Internet through a dial-up service provider. Transmission rates are measured by how many bits of data can cross the wire each second. Slower transmission speeds are measured in kilobits per second (1,024 bits, abbreviated K bit/sec. or Kbps), while faster transmissions are in megabits (M bit/sec.) or gigabits (G bit/sec.).

BY LEE COPELAND

JUST AS A PUBLIC utility for gas or water uses metal or plastic pipes to serve your home, an Internet service provider pumps communications bandwidth, or Internet connectivity, into a business or residence via electronic "pipes" such as standard telephone lines, cable connections or dedicated Internet lines.

Technically, bandwidth is a measure of the communications capacity, generally expressed as a rate of how fast data can be stuffed down an Internet pipe.

A rate of 1 kilobit per second (1K bit/sec.) means the line can pass 1,024 bits of data each second. Faster transmissions are measured in megabits per second (M bit/sec.) and now gigabits (G bit/sec.).

You may recall another term, *baud*, once used to measure modem transmission speeds. Baud refers to how many times the electrical state (voltage or frequency) changes per second, and it was the original unit for measuring telegraph speed. At low speeds, 300 baud is equal to 300 bit/sec. But at higher speeds, a single state change may signal multiple bits, and the correlation fails. The term *baud* is seldom used anymore.

While bandwidth may be similar to gas and electricity, several flavors of bandwidth are available to business and residential customers.

Most consumers get Internet access through a dial-up service. They connect their telephone lines to the modem port on their PC and then dial the local number of an Internet service provider to reach the Internet. A standard PC modem converts analog phone signals to digital data transmissions for data coming into the PC and vice versa. PC modems deliver bandwidth at transmission speeds of 14.4K bit/sec., 28.8K bit/sec. and 56K bit/sec.

Modem speeds above 56K bit/sec. aren't possible using a standard dial-up connection via a telephone line. The twisted-copper pair wires that make up telephone lines have an upper limit of 56K bit/sec. for analog signals, says Carl Garland, an analyst at Current Analysis Inc. in Sterling, Va. Phone lines consist of "relatively crude copper pairs," he explains. "It's the nature of the quality of that hardware that is responsible for the severe bandwidth limitations of dial-up Internet access."

High-Speed Internet Access

Yet, as the Internet has grown, so have the transmission rates. The way to get around the 56K bit/sec. analog limit is to use digital technology. Several all digital-to-digital connectivity options offer data transmission over the Internet at higher speeds than a dial-up connection.

Individually or collectively, these high-speed access methods are often called broadband. Broadband options include integrated cable modem, T-carrier lines and Digital Subscriber Lines (DSL). Each of these services differs technologically, but all are alike in offering dedicated digital Internet access at 1.5M bit/sec. or faster.

Broadband promises to deliver Internet access speeds anywhere from five to 50 times faster than analog dial-up connections. And the cost is relatively low for cable and DSL access, typically about $40 to $50 per month. T-carrier lines are far more costly. Monthly access charges for T1 service start at approximately $400 per month in most areas, a prohibitive cost for most small businesses and residential customers.

Phone companies have offered an intermediate-level service, called Integrated Services Digital Network (ISDN), that delivers bandwidth up to 128K bit/sec. over a digital-to-digital dial-up connection to the telephone network. ISDN's cost of less than $100 per month once made it affordable for smaller companies and some residential customers, but problems installing and maintaining lines and equipment have hastened ISDN's demise, according to Tere Bracco, an analyst at Current Analysis. "Trying to find someone at a carrier who knew what ISDN was or getting someone to install the line was the stuff of legend," she says. "ISDN is a dial-up backup solution for small and medium-size businesses. There's no reason to choose ISDN if DSL or cable is available."

New Options Available
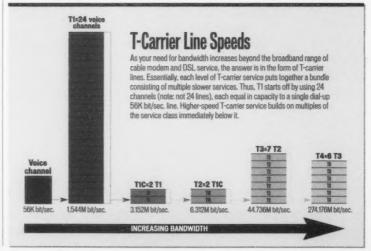
First introduced by AT&T Corp. in the 1960s, a T-carrier line is the most common type of broadband communication line. A T-carrier point-to-point line consists of four copper wires: one pair to receive data, the other pair to transmit it. The slowest T-carrier line, T1, offers rates of 1.544M bit/sec., but T3 can offer speeds of up to 44.736M bit/sec. (see chart).

Cable modems [QuickStudy, June 15, 1999] and DSL [QuickStudy, Feb. 27] are also growing in popularity. Adam Guglielmo, an analyst at TeleChoice Inc. in Tulsa, Okla., says the availability of DSL has made broadband access an option for smaller companies and residential customers. "DSL is opening up broadband to small and medium businesses that would have liked to buy T1 or a fractional T1 but found it too expensive," he said.

Dedicated direct PC-to-Web broadband connections also offer convenience. T-carrier lines, cable modems and DSL stay on continuously with no dialing required.

The Yankee Group in Boston forecasts that the residential market for DSL and cable connections will surge from 1.4 million installations last year to 9 million by 2002.

But with increased transmission speeds comes increased risk, says Matthew Kovar, a Yankee Group analyst. "From a security standpoint, broadband is always on, always vulnerable," he says. "It's a shared network infrastructure, like being on one huge [LAN], so anyone who is connected can see into someone else's system." ▶

T-Carrier Line Speeds

As your need for bandwidth increases beyond the broadband range of cable modem and DSL service, the answer is in the form of T-carrier lines. Essentially, each level of T-carrier service puts together a bundle consisting of multiple slower services. Thus, T1 starts off by using 24 channels (note: not 24 lines), each equal in capacity to a single dial-up 56K bit/sec. line. Higher-speed T-carrier service builds on multiples of the service class immediately below it.

Voice channel 56K bit/sec.	**T1=24 voice channels** 1.544M bit/sec.	**T1C=2 T1** 3.152M bit/sec.	**T2=2 T1C** 6.312M bit/sec.	**T3=7 T2** 44.736M bit/sec.	**T4=6 T3** 274.176M bit/sec.

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EpicRealm Speeds Up Online Transactions

Network provider aims to make buying items on the Internet faster and easier

BY DAVID ESSEX

THE FOUNDERS of epicRealm Inc., a value-added network provider that was launched in April in Richardson, Texas, liken the "worldwide wait" to a line at Walt Disney World: It doesn't matter how long the line is, they say, as long as it's moving.

So they built a global network with sophisticated caching and prioritization software that gives e-commerce customers the sense that something is happening. If a payment screen takes too long to load, the PriorityRealm service moves the request toward the front of the queue or displays other Web pages in the meantime.

Prioritizing Web traffic by content is the next step in managing e-commerce networks, epicRealm claims. "It's not enough to just get content out to the network. You've got to get user input back sooner," says John Ferguson, epicRealm's president and CEO.

The Push Is On

Like other so-called commerce content distributors, epicRealm pushes content out to the Web's "edge" — servers located closer to users — so pages will load faster.

To accomplish this, epicRealm maintains 30 server sites in the U.S. (and another 20 overseas) and uses special software to ensure that the content is synchronized with what's on "origin" servers.

Competing services "expire" Web pages according to a preset time formula, claims Keith Lowery, epicRealm's founder and chief technology officer. "The protocol assumes that freshness can be measured in terms of time," Lowery says. EpicRealm adds event-based synchronization that responds to changes at the customer site — up-to-the-minute sports

scores, for example — and makes sure they go out on the network.

If epicRealm's Epic Central site detects traffic backing up at a customer site, it tells edge servers to begin servicing the highest-priority requests. Customers can also configure PriorityRealm to send "captivation" pages that entertain or inform users waiting in queues.

To promote PriorityRealm to prospective customers, epicRealm "crawls" their sites and reports back on the potential performance boost. This ability to optimize a site remotely is another differentiator, the company claims.

Speed, Simplicity Rule

For Chris Doell, CEO of sportsTalk.com in Palo Alto, Calif., a sports news and discussion site, epicRealm speeds up access to his constantly changing site by 15% to 25% and takes network management worries off his shoulders. Doell reports no problems using the epicRealm network and says he found setup to be painless. "We literally publish our content tree to a directory," he says. "They actually come and get it and publish it to their site."

Doell says he is also impressed by epicRealm's backing (it has raised more than $90 million since its founding late last year) and competent customer service. "They left me with the impression they will do absolutely anything necessary to make us successful," he says.

WebCE.com LLC in Dallas, which provides online training primarily to insurance agents, signed up with epicRealm to ensure high availability by insulating itself from traffic spikes and hostile attacks. "The fees that we're paying them are well worth the peace of mind," says Gary Henkel, the firm's chief operating officer. Besides getting better performance, WebCE.com avoided hiring high-priced network engineers, he says.

WebCE.com CTO Ronnie Howell says epicRealm's easy setup made it a clear choice over main competitor Akamai Technologies Inc. in Cambridge, Mass. "The thing I didn't really like about Akamai is it requires you to make changes to your Web site," Howell says.

EpicRealm's biggest challenge, says Ferguson, is growing quickly enough. Another challenge is locating network improvements to meet the shifting demands of Web traffic. Also in the works is a session-management tool that will help e-commerce sites manage the user's experience. "Predictive analysis on the fly is something you'll see us do," Ferguson adds.

Armed with unique technology and resources to build out its network, epicRealm likes its chances in the network services arena. "There are companies that say, 'We're going to address a global marketplace, but we're only putting infrastructure in Peoria,'" says Lowery. "You better have an infrastructure that has global reach." ▶

Essex is a freelance writer in Antrim, N.H.

CEO JOHN FERGUSON (left) and CTO Keith Lowery say EpicRealm's biggest challenge is to grow quickly enough

EpicRealm Inc.

Location: 1651 N. Glenville Drive, Suite 212, Richardson, Texas 75081

Telephone: (877) 348-8834

Web: www.epicrealm.com

The technology: Internet content distribution and networking services

Why it's worth watching: EpicRealm's service boosts e-commerce transaction speed for customers through dynamic caching and other techniques.

Company officers:
• John Ferguson, CEO
• Keith Lowery, founder and chief technology officer
• Michael Keddington, senior vice president of marketing

Milestones:
1999: Founded
March 2000: Network launched

Employees: 172

Burn money: More than $90 million from several venture capital firms, including Beacon Information Technology Inc., Intel Capital and Lehman Brothers Venture Partners

Product/pricing: PriorityRealm service pricing varies with the amount of content or the required bandwidth and ranges anywhere from $1,000 to hundreds of thousands of dollars per month.

Customers: Buildscape, Fujitsu ICL Systems Inc., Morningstar Inc., sportsTalk.com and TD Waterhouse Group Inc.

Partners: Arthur Andersen LLP, IBM Global Services and Fujitsu ICL Systems

Red flags for IT: Competing value-added networks and Web software and switching vendors plan to add competing content-aware services.

COMPUTERWORLD emerging companies

DAVID OWENS, a self-described evangelist of knowledge management, says he wants to convert IT employees to a new way of thinking about what they know

Champions Of Knowledge

To stop the loss of knowledge and skills when employees leave, many companies are creating the role of the chief knowledge officer – charged with protecting and fostering intellectual capital. By Zachary Tobias

I T HAS BECOME a truism of the New Economy that a company's most valuable asset is the knowledge in its workers' heads.

So more and more companies are making it a top priority to ease the flow of skills and experience among employees — to save the resources workers waste when they have to learn for themselves what their colleagues already know.

Some companies are hiring experts skilled in knowledge management, the burgeoning discipline that seeks to enable businesses to make the most of their "intellectual capital."

For the following chief knowledge officer (CKO), a self-described "missionary and evangelist" of knowledge management, the task at hand is to convert employees to a new way of thinking about what they know.

DAVID OWENS
Vice president and CKO
The St. Paul Cos.
St. Paul, Minn.
www.stpaul.com
The St. Paul is a 10,500-employee insurance company with offices around the world.

Experience: After working as a university dean and educational TV program producer, Owens headed product development at computer-based learning systems vendors Wicat Systems Inc. in Lindon, Utah, and Jostens Learning Corp. in San Diego. From there, he joined Bluebell, Pa.-based software vendor Unisys Corp., where he worked as vice president of worldwide professional development and then as vice president of knowledge management.

A headhunter looking for a training and development expert to head The St. Paul's corporate university contacted Owens last year.

Though the company wasn't looking for a CKO, The St. Paul was receptive to Owens' enthusiasm for knowledge management, and it crafted the new position just for him.

Owens' experience in training and development and project management set him in good stead for a job in knowledge management. While familiarity with knowledge-management information technology systems like Microsoft Corp.'s Digital Dashboard and IBM's DB2 KnowledgeX is important, he says programming skills themselves aren't.

Responsibilities: Owens heads The St. Paul's corporate university, an umbrella organization that trains employees both in classrooms and online.

Owens organizes employees into groups that share professional interests, or "communities of practice." Since The St. Paul's offices are spread as far apart as Argentina and South Africa, its intranet and private chat rooms help keep employees connected.

For example, when a risk manager in France was faced with a virus outbreak at a client hospital, he sent out an e-mail to a community of colleagues throughout the world who had dealt with similar problems. Receiving their input within 24 hours, he was able to provide valuable information about the virus to the client.

Currently, The St. Paul is developing Knowledge Exchange, a part of the corporate university's Web site where employees can share information. Its "virtual collaboration system" includes a bulletin board, places to post meeting notes, access to webcasts and an "experience finder" that enables users to search for others within the company who might have knowledge relevant to their jobs.

To develop the system, Owens meets with employees to determine their needs and then works closely with the IT department to make it as user-friendly as possible.

But technological solutions aren't the endgame. "Only 10% to 20% of the information in a company ever gets into a computer," he says. "We're trying to tap into the 80% of knowledge that sits in people's heads."

The real work is getting employees habituated to freely sharing what they know.

By encouraging managers to encourage their employees to share their skills, and by recognizing with rewards those employees who actively do so, Owens says he hopes to create a corporate culture in which the exchange of knowledge becomes second nature. ▶

Tobias is a freelance writer in Santa Cruz, Calif.

Just the Facts

■ **Name and job title:** David Owens, CKO and vice president

■ **Company:** The St. Paul Cos., an insurance company in St. Paul, Minn.

■ **Nature of his work:** Owens heads the company's corporate university and develops methods to ease the flow of skills and know-how within the company. This includes working with the IT department to create an architecture that enables employees throughout the world to stay connected.

■ **How he got the job:** Owens was contacted by a headhunter seeking a training and development expert for The St. Paul's corporate university. During the interview process, the hiring team decided to expand the role to include broader knowledge-management responsibilities.

■ **Skills required:** While programming skills aren't required, an understanding of the capabilities of knowledge-management IT systems is. Communication skills and the ability to work with people across departments are musts, and some background in project management and training and development is helpful.

■ **Salary potential:** Earnings range from $50,000 to as much as $1 million, but most CKOs earn between $150,000 and $250,000 per year.

■ **Career path:** Since knowledge management touches on many aspects of how a business is run, it's good preparation for virtually any corporate strategic function, says Owens. Many knowledge-management experts have worked at e-commerce companies and consulting firms, and some have gone on to become CEOs at dot-coms.

■ **Advice:** Be patient. It takes time to convince employees unfamiliar with knowledge management of its value. It's especially important to get the support of top executives. "We've spent a good amount of time preaching the gospel of knowledge management to upper management," says Owens.

EVEN AS A CHILD, LISA ENVISIONED A WORLD OF

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Full time Consultant responsible for design and operation of digital cellular systems. Carry out design and modeling of the cellular network, including radio coverage, predictions, capacity and demographic analysis, morphological studies and database acquisition, market analysis, specification of features and services, signaling and interface requirements, and testing methodology. Assist manufacturers and operators in the preparation and submission of license applications and equipment tenders. Conduct prototype testing and field trials. Develop conversion protocols to allow integration of European cellular systems with US cellular systems. Must have a Bachelor's degree in Electronics and communication engineering or foreign degree equivalent. Must have two years of experience of the job offered or in a position with same duties. Salary: $74,582/yr. Send resume to Chip Anderson, Logica Radio Planning. Inc., 3535 Travis Street, Suite 100, Dallas, TX 75204.

Telephony Engineer

Duties: Provisioning and testing of HFC telephone equipment designed to work over two-way CATV networks. Testing, balancing and troubleshooting two-way broadband CATV networks. Testing and troubleshooting baseband analog and digital video equipment and networks. Developing and documenting methods and procedures for field technicians. Building and maintaining two-way broadband CATV networks supporting video, telephone and data services. Requires: B.S. or equiv in Electrical Engineering or related field, plus 2 yrs. exp. as Telephony Engineer. Location: Westminster, CO. Working Conditions: M-F 8a.m.-5p.m. Salary: $78,800/yr. Reply by resume only to Colorado Department of Labor & Employment, Employment Programs, Attn: Jim Shimada. Tower 2, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117 and refer to job order number: CO 4678267.

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MTS-Mathematical and Statistical Modeling (Operations Research Engineer) Duties: Apply optimization techniques with stochastic demand and supply to design telecom and service networks. Develop optimization models to improve business processes. Apply stochastic programming and tabu search to develop, code and test algorithms that solve the models. Identify data sources and obtain data for use in the algorithms. Document and present results to clients with varying degrees of technical aptitude. Requires: MS degree Computer Science, Operations Research or related, plus working knowledge of: (1) Vehicle routing problem solutions; (2) Tabu search for optimization model solutions; (3) Data network planning including the application of optimization models to design Telecom networks (4) Stochastic programming. Location: Boulder, CO Working Conditions: M-F 8 a.m.-5 p.m. Salary: $79,500/yr. Reply by resume only to Colorado Department of Labor & Employment, Employment Programs. Attn: Jim Shimada, Tower 2, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117 and refer to job order number: CO4678269.

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GIS Consultant sought by company in Englewood, CO to work in Westminster, & other unanticipated job sites in the US. For a company that designs & develops software products for the utility and other industries, develop software applications using Geographic Information Systems (GIS) & other types of software as needed. Use Oracle 8, Visual Basic 6, ADO (ActiveX Data Objects), SQL & proprietary languages, & Crystal Report 7 to develop products used in GIS applications, including a total cost model for utility companies, which allows for the interface of various functions within the utility company to be coordinated. Requires bachelor's degree in comp. sci. or related field, incl. elec. eng.; 2 years' progressive GIS experience; working knowledge of Oracle 8 Visual Basic 6, ADO, Crystal Report 7, & SQL (working knowledge may be gained through employment experience or in academic program) 8am-5pm, M-F: $66,100/year (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO4678936.

Software Engineer sought by company in Denver, CO specializing in business software solutions to work in Denver, & other unanticipated job sites in the US. Design and develop software applications and/or software tools that incorporate client/server architecture and interface with a variety of relational database management systems, and are platform independent. Analyze requirements. Create designs and design documentation. Code, test, and debug the software applications Use CASE tools in the design and development process. Provide technical assistance to other Software Engineers. Requires Master's in comp. sci. or related field (incl. mgt. info. systems); working knowledge of designing and developing software applications that access relational database management systems, and CASE tools. (Working knowledge may be gained through employment or in an academic setting.) 8am-5pm, M-F $66,100/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe. Denver, CO 80202, & refer to Job Order Number CO4678947.

Principal Consultant sought by computer software development company in Englewood, CO. to work in Alpharetta, GA & other unanticipated job sites in the U.S. to design, develop & implement software specific to the business requirement of customers. Develop information planning studies. Facilitate implementation of technical & functional requirements for business requirement including application development using Java, C++, ABAP,4 COBOL, & Progress programming language. Logical & physical database design using Progress, Oracle & MS-SQL database Enterprise Resource Planning (ERP), Legacy & WEB integration using MQSeries integrator. Assist client in implementation of all areas of SAP & MFGPRO as well as enterprise application integration using proprietary middleware to integrate ERP with web & mainframe applications Support design, development & testing of proprietary middleware product using Java, C++ in NT, Unix & mainframe operating system. Requires Bachelor's, or foreign degree equivalent, in Computer Science or Engineering; 2 years experience in implementation of ERP software including integration with legacy applications. $103,192/yr; M-F; 8am-5pm. Respond by resume to James Shimada, CO Dept of Labor & Employment, Tower II, #400, 1515 Arapahoe, St. Denver, CO 80202, & refer to Job Order No. CO4678941.

Senior Technical Consultant sought by company in Denver, CO specializing in business software solutions to work in Denver & other unanticipated job sites in the US. At a senior level, provide technical consulting services to internal users & clients regarding the implementation of enterprise resource planning manufacturing software applications, as well as other types of software applications, including problems relating to systems integration & data migration. Perform consulting services by phone as well as on site. Resolve problems & trouble shoot issues that arise during implementation & after the implementation process is completed. Provide user training & support, & teach classes & courses to clients & users Engage in process re-engineering & project management as needed. Requires Bachelor's or foreign equivalent in comp. sci. eng., or a related field (incl. mfg. eng.); 3 yrs. exp. implementing enterprise resource planning manufacturing software applications 8am-5pm, M-F; $62,442/yr (2 openings.) Respond by resume to James Shimada. Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO4678937.

Solution Architect (Network Engineer) sought by company in Englewood, CO to work in Englewood & other unanticipated job sites in the US. For a company that provides management consulting, technical consulting & systems/network integration for clients, work with customers on the development of technology solutions. Use expertise in Microsoft Windows networking & messaging systems, SQL Server & Novell operating systems to determine the correct operating system to be used as well as hardware that will best perform for the client, & develop methods for integrating various operating systems. Work in a variety of operating systems & technologies, to analyze business processes & functions, design network architecture & product integration systems. Create interfaces with existing systems. Requires 2 yrs. exp. as a network engineer w/ experience in designing & implementing Windows networking & messaging systems. MCSE (Microsoft Certified Systems Engineer) as well as working knowledge of SQL Server & Novell operating systems. 8am-5pm, M-F $90,000/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO4678965.

Senior Technical Customer Support Specialist sought by company in Denver, CO specializing in business software solutions to work in Denver & other unanticipated job sites in the US. At a senior level, provide technical assistance, support & training to internal & external users regarding software applications that run in an AS/400 or client/server environment, or are web-enabled, & which interface with a variety of relational database management systems. Trouble shoot & resolve problems that arise or act as liaison between users & the applications & tools development groups. Engage in project management as required. Use programming language C to trouble shoot the software applications. Requires 4 yrs. exp. as a Technical Customer Support Specialist, supporting AS/400 & client/server software applications. Working knowledge of relational database management systems & programming language C. 8am-5pm, M-F; $62,442/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division. Tower II, #400, 1515 Arapahoe. Denver, CO 80202, & refer to Job Order No. CO4678966.

Senior Technical Consultant sought by company in Boulder, CO specializing in consulting to work in Boulder & other unanticipated job sites in the US. Implementation & customization of Oracle applications including Order Entry Purchasing, Alerts, Receivables, Application Object Library, & Workflow, using Designer & Developer 2000 (Oracle Forms 4.5, Oracle Reports 2.0 & 2.5), PL/SQL, SQL*+& SQL Loader. Use web applications for e-commerce, integrating e-commerce with Oracle Enterprise Resource Planning systems & Oracle applications. Train users & technical staff in Oracle Tools & Browsers. Develop customer relationship management (CRM) applications. Requires a Master's degree or equivalent-specifically, requires a Bachelor's (or foreign equivalent) in comp. sci or comp. eng. plus 5 years progressive software experience, or a Master's (or foreign equivalent) in comp. sci. or comp. eng. plus 3 years progressive software experience; working knowledge of Oracle modules including Order Entry, Purchasing, Alerts, Receivables, Application Object Library & Workflow, as well as the integration of e-commerce with Oracle ERP systems & Oracle applications. 8am-5pm. M-F; $85,000/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO4678949.

Consultant II sought by computer software development company in Englewood, CO to work in Alpharetta, GA & other unanticipated job sites in the U.S. to using technical knowledge of SAP R/3 & various proprietary adaptors, interface with end users, programmers, team leaders, product managers, business managers & CFO's to analyze business requirements & model business procedures for SAP implementation. Assist in the implementation of external & internal financial & cost-control modules, including profitability analyses. Use SAP Financial Accounting (FI), General Ledger (FL-GL), Accounts Receivable (FI-AR), Accounts Payable (FI-AP), Asset Accounting (FI-AA), as well as Managerial Accounting (CO), including Cost Center Accounting (CO-CCA), & Profit Center Accounting (EC-PCA) modules to assist in SAP implementation. Develop custom tailored training in the above mentioned modules for clients. Requires Bachelor's or foreign degree equivalent, in Computer Science or Engineering; 2 yrs experience as a SAP consultant using SAP R/3 & SAP Financial Accounting & Managerial Accounting modules. Working knowledge of the following SAP modules: FI, FI-GL, FI-AR, FI-AP, CO-CCA, & EC-PCA. $75,440/yr; M-F; 8am-5pm. Respond by resume to James Shimada, CO Dept of Labor & Employment, Tower II, #400, 1515 Arapahoe Street. Denver, CO 80202 & refer to Job Order No. CO4678966.

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Where the Jobs Are

IT Careers in Oracle & Beyond

Just as there are hundreds of information technology jobs, so too there are people attempting to help companies search through the lists of people and databases to provide the best match possible. While technical skills are a major priority, the recruiters are looking for "fit" – that less tangible meshing of personal needs with business requirements.

The Brixton Group
Charlotte, NC

While IT professionals are its business, the Brixton Group is a leader in bringing together talent and companies in a personal way that decreases the rate of turnover for both. Brixton specializes in permanent recruitment from the networking/programming level up through the CIO level.

Andrew Sobel started the company almost three years ago. "We recruit candidates for permanent positions with our clients, not for contract or freelance work. We will only represent those candidates that we believe will integrate effectively into the culture, as well as the technical environment of our clients," he explains. "This is one major difference between us and other companies."

Sobel relies primarily on referrals from past candidates to keep his pool of professionals strong for clients. "People who refer us to their friends and acquaintances are showing their trust in us. This is a testament to how we conduct business, and helps to define our industry reputation," he says. While serving the client company is the top priority, Sobel says working with candidates is essential. He points to instances where he has helped dual-career couples land on their feet in new cities and even found a high quality master's degree program for one candidate's spouse. "We try to do all of the little things to make each transition go smoothly," says Sobel.

Ryan Sobel, Brixton's online manager, adds, "There is no way to get around online recruiting in this day and age. However, we believe that many strong candidates are passive, and they do not need to use online recruiting aides. We've found that the names of the best people get around. So we rely on our network to find them."

Sobel says the most sought-after technical skills are client/server and web development. "For management positions, we're looking for those who have come up through the technical ranks, for those who have been on the front line. We believe they make more effective managers."

eComServer, Inc.
Princeton, NJ

In the past two years, eComServer, Inc. has grown significantly as one of the powerhouses in business-to-business e-commerce and convergence with telecommunications solutions. Nixon Patel, company founder, president and chief technology officer, says the company will hire close to 200 people in the year 2000.

"We have had very little turnover, despite the tremendous growth," says Patel. "We believe that most people want to work with the expert, and we are in this space. They want to grow as software engineers, which we can offer. All employees participate in our employee stock option plan, and we have a very flexible environment – in terms of your hours, but also in defining your own work space and how and when you will move into new learning areas."

eComServer provides cross-platform expertise to its customers, who include Lucent Technologies, AT&T, Merril Lynch, Prudential, Merck Inc., Samsung and the City of New York.

Patel says he needs software engineers, IVR programmers, product support engineers, sales representatives and traditional business operation services. Technical skills should include Java, C, C++, Corba, systems integration, tools, development, analytical skills and troubleshooting skills.

Orajobs.com
Newport Beach, CA

Orajobs.com just opened its doors this year, but already the IT professional career site is working to provide IT professionals to customers that include the Big Five consulting firms and major universities.

"There is a large population of free-agent professionals," says Mark Hallman, president and founder of the company. "We provide qualified candidates to client companies, for both contract and full-time positions."

However, Orajobs.com, dedicated exclusively to placement for IT pros with an Oracle background, developed a unique process to best match up individuals and companies, while assuring the anonymity of the job seeker. "We also worked to develop a system that would give the candidate more control, which opens the door for the more highly qualified candidates – the passive job seekers," Hallman says.

Job seekers can register anonymously with Orajobs.com to communicate with potential employers by e-mail. "You also can control what type of communication the potential employers have with you such as the notification of jobs for which you're qualified or direct correspondence with the employer."

Each job seeker completes a profile using pull down boxes to describe his or her Oracle skills and experience. When posting a job, the employer defines the job skills and experience needed. In addition, the employer can define a set of qualifying questions to help in filtering the job seekers. "The employers can weight the questions and define knock-out questions, which are those that if the candidate answers in a specific way eliminates him or her from the mix," says Hallman. "The system then scores the responses and sends the employer a list of e-mails to query about interest in the job. The employers get a list of pre-qualified candidates, and the candidates are assured that there is some degree of 'fit' before any one-on-one discussion takes place. It's an automation of the phone screening."

Orajobs.com currently has 1,700 job seekers in its database.

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Online Giant Victim Of Its Own Success

AOL faces big hurdles in its search for expansion

BY MARC L. SONGINI

AMERICA ONLINE Inc. can give the market 24 million good reasons why it will remain a rising financial performer.

Even though AOL's [NYSE:AOL] stock in the past year has dropped from a high of $95 to a low of $48, the world's biggest Internet service provider boasts 24 million subscribers that it can continue to sell on new services and content. But in the search to keep expanding, Dulles, Va.-based AOL faces some big challenges: first and foremost, its quest for approval from U.S. and European regulators for its proposed $350 billion merger with Time Warner Inc. [NYSE:TWX] in New York.

Although AOL's stocks have been sluggish, revenue grew 43% to $6.89 billion for the fiscal year ended June.

The company has been pushing especially hard to get its AOL Anywhere e-mail and news services out to wireless users. This past summer, it cut deals with Redmond, Wash.-based AT&T Wireless Services [NYSE:AWE] and Kansas City, Mo.-based Sprint PCS Group [NYSE:PCS] to reach millions of new subscribers. Last week, it inked another deal with Tokyo-based NTT Mobile Communications Network Inc. to deliver wireless instant messaging and e-mail services.

While AOL is growing and has captured the Internet market, it now has to push into areas it's not comfortable with — specifically, providing content over the wireless pipeline, says Tim Scannell, an analyst at Mobile Insights Inc., a Mountain View, Calif.-based consultancy.

And the planned merger has left a lot of unanswered questions, says Uric Weil, technology strategist at Arlington, Va.-based Friedman, Billings, Ramsey Group Inc., an investment bank.

"In a merger of that size, investors know things don't always go perfectly," he says.

Nevertheless, if AOL can overcome its regulatory hurdles, the result will be the largest Internet-media conglomerate in the world, and most likely boost its stock. But it will probably require a number of concessions, such as making sure Time Warner's customers can select their own Internet providers, to avoid antitrust allegations.

"There will be a lot of scrutiny and it will require a lot of OKs and making sure every *i* is dotted and *t* is crossed before they move forward," says Scannell. "That's one problem of growing to the size of the behemoth." ▶

AOL Stuck in Rut

America Online's stock has stayed in the $55-to-$60 range since late January

$57 .... $55

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NEWS

Energy

from American Petroleum, followed by Bentonville, Ark.-based Wal-Mart Stores Inc.'s purchase of 30 million gallons of low-sulphur fuel, which will be shipped to 11 storage sites.

Earlier this year, Procter & Gamble Co. in Cincinnati tapped Columbus, Ohio-based online marketplace Energy-Gateway.com to buy the natural gas that powers 50 of its North American plants.

"Diesel and gas are commodities, and that simplifies buying online," said Jeff Ridings, an energy procurement manager at UPS. "There aren't a lot of unique features that have to be evaluated."

Another reason more commercial buyers are moving to electronic energy exchanges is to lock in rates. As energy markets are deregulated, "retail buyers are exposed to the same giant price swings that you have on the wholesale markets," explained Richard Baxter, an energy analyst at The Yankee Group in Boston.

In response, "commercial and industrial customers are working with retail [online] energy exchanges to create a profile of their demand, which they put up on the exchange for wholesale suppliers to bid on at reverse auction," Baxter

said. "It's a win-win for both sides: The seller gets to guarantee a profitable sale, and the commercial customer can get a guaranteed rate for [one] year."

Significant administrative cost savings can also be had, because exchanges aggregate and reconcile all purchases, saving time and money for the buyer's internal accounting department.

UPS, for example, now processes about 3,000 paper-based energy invoices per month at a cost of $20 to $40 per invoice. Thanks to its fully integrated set of computer systems, the American Petroleum Exchange will aggregate the invoices, presenting UPS with a single electronic bill each business day.

Yet cost-cutting IT services aren't enough to woo every commercial buyer online.

Fred Wood, energy and facilities manager at Wawa, Pa.-based convenience store operator Wawa Inc., has yet to join an energy exchange. He said he wants to deal with an exchange whose managers are knowledgeable about the energy industry and who have a record of successfully completing large commercial transactions. After talking with several exchanges about buying online, he held off because of his own lack of experience and the exchange's lack of a track record.

"It's a new and exciting market, and there's going to be a lot of new players, but in two to three years, half of those play-

Online Energy Marketplaces

Company: EnergyGateway.com
(www.energygateway.com)
Products: Natural gas and electricity
Customers: PPG Industries, Procter & Gamble

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Company: Enermetrix
(www.enermetrix.com)
Products: Sells to commercial and industrial customers in deregulated energy markets
Customers: Bristol-Myers Squibb, Pepsi-Cola Bottlers, New York Housing Authority

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Company: American Petroleum Exchange
(www.apexchange.com)
Products: Refined energy products, such as diesel fuel and gasoline
Customers: UPS, Wal-Mart

ers will be gone," he added.

Forrester Research Inc. in Cambridge, Mass., forecasts that online energy sales, primarily among wholesalers, will reach $171 billion by 2004.

Forrester says commercial buyers will also move en masse to the Internet to automate their request-for-proposal and request-for-quote processes. By 2004, Forrester expects bid systems to capture 16.5% of online business trade. ▶

E-Signatures

approach these requirements with a certain degree of nervousness," said Christopher Gilkerson, vice president and associate general counsel at San Francisco-based brokerage Charles Schwab & Co. "They raise the thorniest issues of interpretation."

At a Securities Industry Association conference on the topic last week, some attorneys argued that the electronic-signature act applies only in certain cases, such as when contracts are signed, and doesn't necessarily cover all documents that are delivered electronically.

Mark Borges, the SEC's attorney adviser at the Division of Corporation Finance, advised brokerages to comply with both sets of rules until the SEC makes a final determination on its stance. But he said his remarks shouldn't be viewed as the agency's official stance on the matter.

Meanwhile, the electronic-signatures law, officially called the Electronics Signature in Global and National Commerce Act, allows for exemptions. That means the SEC could decide that online brokerages could continue to send out digital prospectuses to customers without verifying that

the customers can access the information.

SEC spokesman Chris Ullman said the agency doesn't yet have an official response to Wall Street worries about conflicting e-document rules. "We are aware of the concerns that people have, and we are developing regulatory guidance that we hope to have out soon," he said, but he could offer no definite time frame.

Attorneys for big brokerages said they're impatient with the SEC's wait-and-see attitude.

"If the commission doesn't put forward a view, there's going to be enormous confusion out there," said Sam Scott Miller, a partner at Orrick, Herrington & Sutcliffe LLP in San Francisco. "What makes you think that a year from now you're going to know an awful lot more than you know now? And meantime, people are going to be making mistakes."

Uncertainty Rules

Others, such as investment bankers, said they wouldn't want to go through the expense and hassle of revamping their institution's business processes or invest in new technologies to meet the new electronic-signatures requirements only to have to make another set of modifications should the SEC elect to change its guidelines.

Wall Street executives are also concerned that some of the rules spelled out in the e-signatures legislation are impossible to carry out.

For example, under the legislation, digitally stored documents must be kept in an "unalterable" state, according to Section 201 of the act. This is an unreasonable demand, said Michael L. Michael, senior vice president and chief compliance officer at Fidelity Investments in Boston.

"We all know that in a paper-based environment, there is no such thing as an unalterable document," he said.

In the electronic world, records can also be tampered with. Optical disks that can be written only once can be altered, he said.

"If you were to smash one with a hammer, that's altering it," he said. ▶

N/I Packs 'em in as Users Seek to Network

BY JAMES COPE

Loudspeakers blasting past the threshold of pain, vendors yanking network managers from the aisles into their booths and people trying to pack a month's worth of meetings into a few days: Yes, it's trade show season again.

This particular action took place last week at the fall Networld/Interop exposition and conference in Atlanta.

Despite the obvious aggravation, people like Bruce Rupprecht, a network administrator at the Beaverton School District in Beaverton, Wash.,

still came. Rupprecht wanted to see what kind of software was available to measure network utilization and trending.

"I'm also looking for anything I can find on IP content multicasting," Rupprecht said, including products for converting analog audio and video to digital to send over the network to classrooms in his 45-school system. Rupprecht said he's even mulling moving phone systems to voice over IP to get better use from his Gigabit Ethernet.

Terry Coulter, a network administrator at the Morganton,

N.C.-based Western Carolina Center, which cares for the mentally retarded, is also interested in videoconferencing. At the Avaya Inc. booth, he researched video technologies. Basking Ridge, N.J.-based Avaya was formed as a spin-off of Murray Hill, N.J.-based Lucent Technologies Inc.

Coulter also stopped at the booth of Cupertino, Calif.-based Symantec Corp. Apparently, the Norton AntiVirus software from Symantec he had installed on a couple of hundred PCs in his organization didn't detect a variant of

the "I Love You" virus, and Coulter's team spent too many hours going through a 10-step process to purge it from all the infected machines.

New buildings mean new network switches; at least that's true for Gary Ures. The network administrator at Simula Safety Systems, a safety products company in Tempe, Ariz., came to Networld/Interop to talk with switch vendors and find out more about storage-area networks.

For Ures, though, "One of the main reasons I came was to meet other network people and ask them what really works." That, he said, can save network people a lot of time, trouble and money. ▶

FRANK HAYES/FRANKLY SPEAKING

Let the users do it

NOW THAT SUMMER IS OVER, it's time for corporate IT shops to get back to the serious business of unloading as much work as possible on users. No, really — we should be continually shifting routine tasks from our plate to theirs. Technology and users' increasing technical sophistication make that possible. These days, users generate reports, rework user interfaces and create Web sites — things that once would have required navigating a six-month IT-shop

backlog and three levels of managerial approval. Now users do those tasks from their PCs every day.

Because they do, we don't have to. And the more we can get them to do, the less of our resources we burn on routine tasks and the more we have for making new technology useful to the business.

At a trade show over the summer, I ran into an old vendor under a new name. Blaze Software Inc. has some application development tools designed to let users do routine maintenance on applications. Specifically, it lets them change the business rules in the application without requiring programmers.

(Programmers *do* have to build the applications to start with. But once they're done, routine maintenance like changing what kind of customer gets a discount or when to deny credit can be handled by ordinary mortals.)

Maybe this sounds familiar: It's a lot like the business-rules-based technology that a company called Neuron Data offered a decade ago, back in the days when the list of fourth-generation languages didn't begin and end with Visual Basic. That's no surprise — Blaze is really just Neuron Data with a new coat of paint, new management and an IPO.

But it's still a good idea — in fact, maybe a better idea now that users are used to revising spreadsheets and tweaking off-the-shelf software themselves.

We don't actually need Blaze to do it. We just need to decide from now on to build our applications as user-maintainable as we can.

Why? Not just because it means less work for us. Not even because it gives users more control over their tools — and they're the ones who know what those tools need to do and how, in

ways we'll never completely get.

Mainly, we need to palm this kind of work off on users because we've got better things to do. We simply can't afford to do lots of routine maintenance, not if we're going to deliver the projects that only IT can drive, like B2B e-commerce and full-blown supply-chain integration. That's where we're creating value.

But we have limited budgets and bodies. The more mechanical, routine tasks we do, the fewer high-profile, high-benefit things we can deliver.

We're stuck with some tasks — help desks and bug fixes will be with us forever. But what we can get users to do, we should.

Funny thing: Everybody else seems to have figured out this let-the-users-do-it routine already. On the Web, customers do their own data entry and routine customer service, so customer-service reps can focus on the harder questions, where they're really needed. Human resources departments put benefits information on intranets for employees to browse self-service style, too.

And we know from their experience that users like it — at least, when the systems are designed to make self-service easy. We'll have to make it easy for them to maintain their own apps, too — and make sure the wrong users can't arbitrarily change business rules or policies.

But we can do that. And we should. Because the more we do — the more work we hand off to users — the more time and resources we'll have for doing the really good stuff. ▶

We need to palm this kind of work off — we've got better things to do.

Hayes, Computerworld's senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

The 5th Wave

"Well, that's the third one in as many clicks. I'm sure it's just a coincidence, still, don't use the 'Launcher' again until I've had a look at it."

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